No. 2014-1040

IN THE

United States Court of Appeals for the Federal Circuit

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ROBERT BOSCH, LLC, a Delaware corporation,

Plaintiff-Appellant,

v.

SNAP-ON INCORPORATED, a Delaware corporation, DREW TECHNOLOGIES, INCORPORATED, a Michigan corporation,

Defendants-Appellees.

———————————

Appeal from the United States District Court for the Eastern District of Michigan in case no. 2:12-cv-11503, Judge Robert H. Cleland.

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BRIEF FOR APPELLANT

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January 23, 2014

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CERTIFICATE OF INTEREST

Counsel for appellant, Robert Bosch LLC, certifies the following:

1.   The full name of every party or amicus represented by me is:

Robert Bosch LLC

2.   The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

None

3.   All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

Robert Bosch, LLC hereby discloses that its parent corporations are Robert Bosch North America Corporation and Robert Bosch Zweite Vermogensverwaltungsgesellschaft mbH; and that no publicly held corporation owns 10% or more of its stock.

4.   The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are:

Erik G. Swenson, George W. Jordan, III, Jonathan S. Franklin, and Sheila Kadura (Fulbright & Jaworski LLP)

Dated: January 23, 2014

/s/ Jonathan S. Franklin
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TABLE OF CONTENTS

Page

TABLE OF AUTHORITIES

Page(s)

CASES:

STATUTES:

RULES:

STATEMENT OF RELATED CASES

No other appeal in or from the same civil action or proceedings in the district court was previously before this or any other appellate court. Counsel for appellant Robert Bosch, LLC ("Bosch LLC") is aware of no other cases pending in this or any other court that may directly affect or be directly affected by this Court's decision in this appeal.

JURISDICTIONAL STATEMENT

The U.S. District Court for the Eastern District of Michigan had jurisdiction under 28 U.S.C. §§ 1331 and 1338(a). On September 23, 2013, the district court entered a stipulated order of dismissal and final judgment in favor of Snap-on, Inc. ("Snap-on") and Drew Technologies, Inc. ("Drew Technologies") (collectively, "Defendants") on their invalidity counterclaims, declaring all claims of U.S. Patent No. 6,782,313 ("the '313 Patent") invalid for indefiniteness. A1. The court dismissed Bosch LLC's claims of infringement as moot and further certified its judgment for immediate appeal under Federal Rule of Civil Procedure 54(b). A1-2. Bosch LLC timely filed its notice of appeal on October 23, 2013. A5227. This Court has jurisdiction under 28 U.S.C. § 1295(a)(1).

STATEMENT OF THE ISSUES

1.   Whether the district court erred in holding that "program recognition device" is an indefinite term that renders the claims of the '313 Patent invalid.

2.   Whether the district court erred in holding that "program loading device" is an indefinite term that renders the claims of the '313 Patent invalid.

STATEMENT OF THE CASE

This action began on April 4, 2012, when Bosch LLC sued Snap-on in the U.S. District Court for the Central District of California for infringement of the '313 Patent. A85-89. Bosch LLC later added infringement allegations against Drew Technologies (A99-100; A110; A298-306), and the action was transferred to the Eastern District of Michigan (A133). Defendants answered Bosch LLC's allegations and filed counterclaims seeking a declaratory judgment that the '313 Patent is not infringed, is invalid, and is unenforceable. A335-39.

After Defendants had completed claim construction briefing, Defendants asserted for the first time[1] that two terms appearing in the asserted patent claims— "program loading device" and "program recognition device"—are means-plus-function terms under 35 U.S.C. § 112, ¶ 6 (2010) ("Section 112(6)")[2] and are indefinite. A3114; A3117-19; A2946. The district court allowed supplemental

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[1]   Bosch LLC was a few hours from filing the final claim construction brief in a five-month long *Markman* process when Defendants sent an email notifying Plaintiff of their new-found theory. *See* A3114.

[2]   In 2011, 35 U.S.C. § 112, ¶ 6 was recodified without modification at 35 U.S.C. § 112(f). *See* Pub. L. 112-29, § 4(c), Sept. 16, 2011, 125 Stat. 296. Because the prior version governs the patent at issue, *see id*. § 4(e), this brief will refer to the prior codification.

briefing on this issue and ultimately held that "program loading device" and "program recognition device" are means-plus-function terms that are indefinite for failing to disclose corresponding structure. A11-18. In light of the district court's holding that all claims in the '313 Patent are invalid as indefinite, the parties stipulated to a final judgment of invalidity, subject to Bosch LLC's right of appeal. A1-2. The court granted that request and entered final judgment on September 23, 2013 declaring all claims of the '313 Patent invalid for indefiniteness, dismissing all infringement claims as moot, and further certifying its judgment for immediate appeal pursuant to Fed. R. Civ. P. 54(b). *Id.* Bosch LLC timely appealed to this Court. A5227-28.

STATEMENT OF FACTS

A. The '313 Patent.

The '313 Patent claims a diagnostic tester for use in reprogramming a motor vehicle's programmable control units. A93 (1:8-11, 2:6-16). Diagnostic testers were generally known at the time of the invention and had been used to load entire programs into unprogrammed control units that are then installed into motor vehicles. *Id.* (1:19-36). In contrast, the patented technology provides a way to determine whether the control unit present in a motor vehicle needs to be reprogrammed. *Id.* (1:59-2:6). As the '313 Patent specification explains, the diagnostic tester automatically carries out any necessary reprogramming such that

3

"no particular attention is required by the maintenance and service personnel to carry out this [reprogramming] during maintenance and service work." *Id.* (2:41-47). One advantage of the claimed invention is that it "allows the updating of programs available in control units without requiring considerable additional expense for this." A94 (4:11-13).

The claimed external diagnostic tester is made up of a "program recognition device" and a "program loading device," which are the two claim terms at issue in this appeal. Both terms are recited in claim 1, and also in the remaining claims of the '313 Patent by virtue of their dependency on claim 1. Claim 1 recites:

> 1. An external diagnostic tester for motor vehicles, the motor vehicles having programmable control units with self-diagnostic means, wherein the control units can be connected to the external diagnostic tester via a diagnostic/test plug in the motor vehicle, the external diagnostic tester comprising,
>
> a *program recognition* and *program loading device*, wherein a program version contained in a connected control unit is queried and recognized by means of the *program recognition device*, and, if the program available in the motor vehicle and recognized via the diagnostic/test plug is not stored there in a latest and most current version, a respective most current version is loaded by the *program loading device* into a program storage device of the pertinent control unit of the motor vehicle, wherein the external diagnostic tester automatically establishes communication with a central dat[a] base[3] in order to check the program version and, if necessary, to obtain the

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[3] The "central data base" term was misspelled when the '313 Patent issued. The parties agree that the correct term is "central data base." A4 n.2.

current program version that applies for the control unit connected to
the diagnostic tester and to store it there.

A94 (emphases added).

The '313 Patent claims and specification explain how the two components of

the external diagnostic tester—the program recognition device and program

loading device—interact with the control unit of a motor vehicle. The program

recognition device is physically connected to the control unit of the motor vehicle,

through the diagnostic plug, and it queries and recognizes the program version

available in that control unit. *See* A93 (2:20-22) ("the program version contained

in the connected control unit is queried and recognized using the program

recognition device"); *id.* (3:19-23) ("the external diagnostic tester automatically

checks, using the program recognition device simultaneously and preferably

automatically, which program version and which data record is available in the

control unit connected at that moment"). To interface with the control unit in a

motor vehicle, the program recognition device connects to the diagnostic/test plug

in the motor vehicle. *See* A92 (abstract) ("the program available in the motor

vehicle [is] recognized via the diagnostic/test plug"); A94 (4:27-29) (same).

The program loading device component of the external diagnostic tester also

connects to the control unit of a motor vehicle through the diagnostic plug. If

necessary, the program loading device loads an updated version of a program into

the program storage device component of the control unit. *See* A94 (4:30-33) ("a

respective most current version [of the program] is loaded by the program loading

device into a program storage device of the pertinent control unit of the motor

vehicle"); *id.* (3:25-28) ("the most current version [of the program] is loaded into

the program storage device of the corresponding control unit by a program loading

device, with which the external diagnostic tester is also equipped"); A93 (2:25-29)

("the respective most current version [of the program] is loaded by the program

loading device of the diagnostic tester into the program storage device of the

pertinent control unit of the motor vehicle"). The program loading device

interfaces with the control unit of a motor vehicle via the diagnostic/test plug in the

motor vehicle. *See* A93 (1:27-31) (prior art discussing how "control unit programs

can be loaded into the unprogrammed control unit via the interface of the

diagnostic/test plug").

B.   Claim Construction Proceedings In The District Court.

Bosch LLC filed suit against Defendants, alleging that their Pass-Thru Pro

II, CarDAQ-Plus, and VERUS Diagnostic Platform products infringe claims 1-6 of

the '313 Patent. A3-5. Per the district court's scheduling order, Defendants were

required to disclose any grounds of invalidity based on 35 U.S.C. § 112 (*e.g.*,

indefiniteness) by July 27, 2012. A292-93. Defendants did not disclose any

invalidity positions based on indefiniteness at that time, and the case moved into

the claim construction phase when the parties proposed terms to be construed and

exchanged proposed constructions in September and October of 2012. A293-94.

The parties completed claim construction briefing in February 2013. A295;

A68-69; A72-73. During this time, Defendants proposed definite constructions of

"program recognition device" and "program loading device," and argued that the

evidence intrinsic to the '313 Patent supported those constructions. A1376-78. In

February 2013, after Defendants had completed claim construction briefing,

Defendants changed their positions as to the terms "program loading device" and

"program recognition device," asserting for the first time that each is a means-plus-

function term. A3114; A3117-19. Two months later, Defendants filed a

supplemental claim construction brief arguing that those terms are indefinite based

on the '313 Patent's alleged failure to disclose corresponding structure. A2946.

In response, Bosch LLC asserted that neither term is a means-plus-function

term because one of ordinary skill in the art would understand that the terms

identify structures and the terms are not generic means of accomplishing functions.

A3066-74. In support of its position, Bosch LLC submitted a declaration from Dr.

Wolfgang Wagner, a co-inventor, who is an engineer with "extensive experience

with computerized and automated technologies for engine management and

control, including vehicle communication technologies." A3084 (¶ 7). Dr.

Wagner has "worked in engine management and control for over 25 years."

7

A3083 (¶ 4). When the '313 Patent was filed, Dr. Wagner had "3 years of industry experience in engine management and control (including computerized and automated technologies), a degree in mechanical engineering, and a graduate degree in thermodynamics." A3084 (¶ 9); *see also* A3083 (¶ 3). Dr. Wagner's qualifications meet Defendants' criteria for one of ordinary skill in the art because, when the '313 Patent application was filed, Dr. Wagner had at least four years of educational training in engineering and at least two years of experience in engineering of automotive control systems. *See* A3023 (¶ 5). Dr. Wagner thus explained that although he is a co-inventor on the '313 Patent, his declaration "offer[ed] opinions as a technical expert from the vantage point of one of ordinary skill in the art." A3084 (¶ 10).

Regarding the term "program recognition device," Dr. Wagner declared that the term "had a generally understood meaning in the art at the time the application of the '313 Patent was filed." A3087 (¶ 23). Specifically, one of ordinary skill in the art would have understood that a program recognition device is "an electronic detection unit configured to identify or acknowledge the existence, status or validity of a program." *Id.* (¶ 21). Dr. Wagner further explained that a program recognition device is a particular structure, rather than an expression of a generic means for accomplishing a function. *See* A3088 (¶ 27) ("The 'program recognition

8

device' is the structure."). Dr. Wagner listed examples of program recognition

devices that he has personally used. A3087 (¶ 24).

As for the "program loading device," Dr. Wagner declared that the term

likewise "had a generally understood meaning in the art at the time the application

of the '313 Patent was filed." A3085 (¶ 14). Specifically, one of ordinary skill in

the art would have understood that a program loading device is "an electronic

device configured to copy or move a computer program into a memory area from

which the program is executed." *Id.* (¶ 12). One specific program loading device

that Dr. Wagner has personally used is an installer. *Id.* (¶ 15).

The '313 Patent claims also reference a "program storage device," but

Defendants did not assert that this is a means-plus-function term. Instead,

Defendants agreed with Bosch LLC that the term should be given its plain

meaning. A2214; A2216 (n.6). Similarly, the program recognition and program

loading devices comprise the claimed "external diagnostic tester," but Defendants

have not contended that this is a means-plus-function term. Although Defendants

took the position that "program recognition device" and "program loading device"

must be means-plus-function terms because "both parties kept defining the

terms . . . based upon their function rather than upon any structure" (A2214; *see*

also A4247; A4262; A4642), Defendants did not assert that "external diagnostic

tester" is a means-plus-function term, even though both parties proposed that the term means "a device capable of" accomplishing specified functions. *See* A9.

The district court accordingly construed "external diagnostic tester" as "a device capable of" accomplishing specified functions, and in particular a "device capable of temporarily connecting to a motor vehicle and capable of performing, controlling or aiding in an investigation into the cause or nature of a condition, situation, or problem affecting a programmable control unit of the motor vehicle." A9-11.   The court did not hold that this was a means-plus-function term.

C.   The District Court's Claim Construction Order.

The district court nevertheless held that "program loading device" and "program recognition device" are means-plus-function terms and are indefinite. A11-18. First, the district court (improperly) adopted a presumption that "program recognition device" is a means-plus-function term based on the phrase "by means of" in the following language in claim 1: "wherein a program version contained in a connected control unit is queried and recognized *by means of the program recognition device*." A11 (emphasis added). The district court held that the presumption it had applied was not overcome, reasoning that "the claim language is silent as to the structure for 'program recognition device,'" and it was "unclear whether 'program recognition device' is comprised of computers, circuitry, software, or something else." A12-13.

The district court wholly disregarded Dr. Wagner's testimony regarding the meaning of "program recognition device" to one of ordinary skill in the art. First, the court stated that "inventor testimony as to the inventor's subjective intent is irrelevant to the issue of claim construction." A14 (quoting *Howmedica Osteonics Corp. v. Wright Med. Tech., Inc.*, 540 F.3d 1337, 1347 (Fed. Cir. 2008)). Second, the district court held that "the testimony of one of ordinary skill in the art cannot supplant the total absence of structure from the specification." *Id.* (quoting *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1312 (Fed. Cir. 2012)).

The district court then determined that the recited function for the program recognition device is "to query and recognize a program version contained in a programmable control unit of a motor vehicle." A11-12. As to the structure corresponding to that alleged means-plus-function term, the district court reasoned that "[t]he specification is brief and does not include any diagrams, flowcharts or algorithms" and that "'[p]rogram recognition device' is discussed only in terms of its function, not its structure." A13.

Although the district court noted that Defendants had taken contradictory positions by initially offering a construction of "program recognition device" and then later alleging the term could not be construed, the court (incorrectly) interpreted Bosch LLC's position as arguing that these contradictions meant that

11

Defendants had waived the right to argue indefiniteness. *See* A15. The court held

that Defendants had committed no waiver. *Id.*

The district court then concluded that "[w]ithout a corresponding structure,

Defendants have met their burden of proving by 'clear and convincing evidence'

that 'program recognition device' is indefinite." A15. The court thus held claim 1

and its dependent claims invalid as indefinite. A16.

For "program loading device," the district court correctly noted that the term

is presumed ***not*** to be a means-plus-function term because the term does not recite

the word "means." *Id.* However, the district court concluded that the presumption

against invoking Section 112(6) was overcome "for the same reasons that 'program

recognition device' did not recite sufficient structure." A17. Specifically, the

court reasoned that "'program loading device' [is] a claim term that recites a

function but not a sufficient structure" such that it invokes Section 112(6). *Id.*

The court further held that the "function for 'program loading device' is 'to

load the most current version of a program into a program storage device of the

pertinent programmable control unit of the motor vehicle.'" A16-17. The court

then determined that no corresponding structure was provided for the "program

loading device" because "[a]s it did with 'program recognition device,' the

specification discusses only the function of 'program loading device,' but is silent

regarding its structure." A17. The court held that Dr. Wagner's testimony

regarding the generally understood meaning of "program loading device" was

"insufficient because an inventor's subjective intent has no bearing on how a claim

should be construed." *Id.* The court thus held that "program loading device" is

indefinite. A18.

In light of the district court's holdings of indefiniteness, which invalidated

all claims in the '313 Patent, the parties requested and the district court entered a

final judgment declaring the patent invalid, subject to Bosch LLC's right of appeal.

A1-2. Bosch LLC then timely appealed to this Court. A5227-28.

SUMMARY OF ARGUMENT

The district court incorrectly held that the terms "program recognition

device" and "program loading device" are means-plus-function terms drafted

pursuant to Section 112(6). Invoking that provision is entirely optional with the

patentee. Here, the inventors did not elect that option but instead claimed physical

structures rather than generic means for accomplishing functions.

To begin with, the district court improperly applied a presumption that

"program recognition device" is a means-plus-function term simply because the

patent claims note that "a program version . . . is queried and recognized by means

of the program recognition device." Noting that a particular task can be

accomplished "by means of"—*i.e.*, by using—a previously claimed device does

not invoke a presumption that the Section 112(6) format has been employed,

because this phraseology is not part of the classic template for functional claim elements that has come to be closely associated with means-plus-function claiming.   As used in this claim, the phrase "by means of" is not a generic noun substituted for a structural term. The "program recognition device" is identified and therefore claimed without denominating it as a generic "means for" or "means of" accomplishing a function, and the presumption in favor of means-plus-function format is not triggered merely because the patent also notes that certain functions can be performed using that claimed structure. Accordingly, the district court should have applied a presumption—as it did with the term "program loading device"—that the patentee did not invoke Section 112(6).

Neither "program recognition device" nor "program loading device" is a means-plus-function term. Statements in the claims or specification about what a device is connected to and what signals it processes show that the device is a physical structure that does not invoke Section 112(6). *See Inventio AG v. ThyssenKrupp Elevator Americas Corp.*, 649 F.3d 1350, 1358-59 (Fed. Cir. 2011). Here, the claims and specification describe what the "program recognition device" and "program loading device" are connected to, how they interact with the connected components, and what processing they perform. The patent makes clear that these structures include physical electronic circuits that participate in signal receipt, processing, and output. The claims and specification do not simply

14

describe these devices generically as anything that can accomplish a particular function.

Moreover, the district court erred in wholly disregarding the expert testimony from Dr. Wagner that "program recognition device" and "program loading device" are terms that had generally understood structural meanings in the art at the time the '313 Patent application was filed. Contrary to the district court's holding, this was not simply testimony as to the inventor's subjective intent. Rather, Dr. Wagner testified from the perspective of one skilled in the art, and this Court's precedents make clear that such expert inventor testimony is probative on questions of claim construction, including whether Section 112(6) has been invoked and whether claim terms are structures that would be understood by one of ordinary skill in the art. Nor was Dr. Wagner attempting to supply structure for a means-plus-function term that is not contained in the specification; rather, his testimony supports the conclusion that the terms are not in means-plus-function format to begin with. When this extrinsic evidence is considered—as it should be—it is plain that the '313 Patent does not invoke the format of Section 112(6).

Finally, the district court erred in holding that "program recognition device" and "program loading device" are means-plus-function terms based on reasoning that the terms are defined by the functions they perform. Where, as here, a term denotes an actual structure rather than a generic means, it still constitutes a definite

15

structure regardless of whether the term may be defined by reference to its function and may not connote a precise physical structure.

For these reasons, the Court should reverse the judgment of the district court holding the '313 Patent invalid for indefiniteness. Both "program recognition device" and "program loading device" are ordinary claim terms subject to the ordinary requirements of definiteness—which Defendants have not disputed are met—rather than the special rules applicable to means-plus-function terms.

ARGUMENT

I.   STANDARD OF REVIEW

Indefiniteness is a question of law that is reviewed de novo. *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1378 (Fed. Cir. 1999). Determining whether certain claim language invokes Section 112(6) "is an exercise in claim construction and is therefore a question of law, subject to *de novo* review." *Inventio*, 649 F.3d at 1356. Evidence from experts, however, may be relevant to the analysis. *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed. Cir. 2004).

The district court's claim construction order was effectively a summary judgment ruling, as the court held the '313 Patent invalid without any trial of the facts. A16. Summary judgment is appropriate only when there is no genuine issue as to any material fact such that the moving party is entitled to judgment as a

16

matter of law. Fed. R. Civ. P. 56(c); *Rembrandt Data Techs., LP v. AOL, LLC*, 641 F.3d 1331, 1343 (Fed. Cir. 2011) (reversing summary judgment of indefiniteness based on "genuine disputes of material fact").

Issued patent claims "are accompanied by a presumption of validity based on compliance with, *inter alia*, § 112 ¶ 2." *S3 Inc. v. NVIDIA Corp.*, 259 F.3d 1364, 1367 (Fed. Cir. 2001). Therefore, a challenger asserting invalidity based on indefiniteness must prove its case by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2242 (2011); *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1376 (Fed. Cir. 2001). A claim is invalid for indefiniteness only "if reasonable efforts at claim construction prove futile, that is, if a claim is insolubly ambiguous, and no narrowing construction can properly be adopted." *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 424 F.3d 1374, 1383 (Fed. Cir. 2005) (internal quotation marks omitted).   "If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, [this Court has] held the claim sufficiently clear to avoid invalidity on indefiniteness grounds." *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001). Thus, "close questions of indefiniteness in litigation involving issued patents are properly resolved in favor of the patentee." *Id.* at 1380.

II. "PROGRAM RECOGNITION DEVICE" AND "PROGRAM LOADING DEVICE" ARE NOT INDEFINITE.

Under Section 112(6), a patentee may choose to express a claim element "as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. § 112(6) (2010). Importantly, however, Section 112(6) merely provides a patentee with "the option of using the means-plus-function format." *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1582, 1584 (Fed. Cir. 1996). It remains the patentee's sole discretion as to whether to invoke Section 112(6) by describing a claim in "purely functional language," *id.* at 1583, or instead to claim a physical structure.

If the patentee elects to invoke Section 112(6), the claim will potentially cover a broader range, but can be indefinite if one skilled in the art would not discern the corresponding structure in the specification. *See*, *e.g.*, *Atmel Corp.*, 198 F.3d at 1382. But if the patentee elects not to invoke Section 112(6), the claim will instead be judged according to the standards that apply to all other patent claims—whether the claims provide sufficient particularity and clarity to inform skilled artisans of the bounds of the invention. *See*, *e.g.*, *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 537 F.3d 1357, 1371 (Fed. Cir. 2008). In this case, Defendants have not contended that any claims of the '313 Patent fail this latter

18

test—nor could they, given that they proposed their own definite constructions of the claim elements. Instead, they argued (and the district court agreed) that the claimed "program recognition device" and "program loading device" are means-plus-function terms that are indefinite because the specification fails to disclose corresponding structure. Accordingly, the district court's judgment must be reversed if those terms are not phrased in means-plus-function format. As explained below, the judgment should be reversed for this reason alone.

A.   **The District Court Erred In Presuming That "Program Recognition Device" Is A Means-Plus-Function Term.**

Because the use of Section 112(6) is entirely optional, when determining whether a claim element is a means-plus-function element, the question is "whether, in the selection of claim language, the patentee must be taken to have exercised [the] option" of using the means-plus-function format. *Greenberg*, 91 F.3d at 1584. In conducting this inquiry, the Court has held that "the language 'means . . . for' invokes a rebuttable presumption that § 112, ¶ 6 applies." *Gemstar-TV Guide Int'l, Inc. v. Int'l Trade Comm'n*, 383 F.3d 1352, 1361 (Fed. Cir. 2004). But this presumption should not be triggered by any and every use of the word "means" in a patent, regardless of the context in which the word appears. *See York Prods., Inc. v. Cent. Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1574 (Fed. Cir. 1996) ("mere incantation of the word 'means' in a clause reciting predominantly structure cannot evoke section 112, ¶ 6").

19

As the Court has explained, "[t]he use of the term 'means' is central to the analysis because the term 'means,' particularly as used in the phrase 'means for,' is 'part of the classic template for functional claim elements' and has come to be closely associated with means-plus-function claiming." *Lighting World*, 382 F.3d at 1358 (citations omitted). If the patent uses this well-known formulation, the patentee will be presumed to have elected the Section 112(6) option. If, however, a claim does not use this "classic template for functional claim elements," the opposite presumption applies—that the patentee did not elect to employ Section 112(6)—and that presumption "is a strong one that is not readily overcome." *Id.*; *see also MIT v. Abacus Software*, 462 F.3d 1344, 1356 (Fed. Cir. 2006) ("'[W]e have seldom held that a limitation not using the term 'means' must be considered to be in means-plus-function form,' and 'the circumstances must be [unusual] to overcome the presumption . . . .'") (quoting *Lighting World*, 382 F.3d at 1362).

Claim 1 of the '313 Patent includes two references to a program recognition device: "the external diagnostic tester comprising, a ***program recognition*** and program loading ***device***, wherein a program version . . . is queried and recognized by means of the ***program recognition device***." A94 (4:22-27) (emphases added). The district court emphasized that the second instance of "program recognition device" is preceded by the phrase "by means of." *See* A11. Because of this language, the district court adopted the presumption that "program recognition

20

device" is a means-plus-function term. *Id.* That was reversible error. In claiming

this device, the patent does not invoke the classic template for functional claim

elements that triggers the presumption. When first reciting a program recognition

device, the patent does not use the term "means" at all, much less the classic phrase

"means for" or anything like it. Only after reciting (and thereby claiming) that

device does the patent go on to note that a program version will be queried and

recognized by means of—*i.e.*, by using—the previously claimed program

recognition device rather than the program loading device. This subsequent use of

the term "by means of" to denote which claimed structure accomplishes a certain

task does not trigger the presumption in favor of Section 112(6).

Traditionally, "means for" denotes that there is corresponding structure

(identified in the specification) for accomplishing the functions. The term "means"

is a noun purposely substituted for a structural term for a particular reason. In

claim 1, the use of the word "means" is not a noun substituted for a structural term.

Rather, the use of the word "means" in claim 1 is part of a prepositional phrase

used to state which structure is used to accomplish a task, *i.e.*, the program

recognition device rather than the program loading device.

As the cases cited by the district court show, the "by means of" phrase in

claim 1 is not the type of "means" language that triggers the presumption. *See*

Greenberg, 91 F.3d at 1583 (there is "seldom any confusion about whether section

112(6) applies to a particular element" because "[c]laim drafters conventionally

use the preface 'means for' (or 'step for') when they intend to invoke section

112(6)"); *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1375-77 (Fed. Cir. 2003)

(applying the presumption to "means of booting"); A11 (citing *Altiris*, 318 F.3d at

1375; *Greenberg*, 91 F.3d at 1584). Mere use of the word "means" does not

trigger the presumption that Section 112(6) applies when, as here, the claim does

not link the "means" language to a recited function. *See York Prods.*, 99 F.3d at

1574 ("Without a 'means' sufficiently connected to a recited function, the

presumption in use of the word 'means' does not operate."); *Phillips v. AWH*

Corp., 415 F.3d 1303, 1311 (Fed. Cir. 2005) (en banc) (claim to "further means . . .

comprising internal steel baffles" did not invoke presumption in favor of Section

112(6) because "the reference to 'baffles' does not use the word 'means'").

The recitation of "means" preceding a claim element triggers the

presumption when a claim uses the phrase "means for" or "means of," followed by

a recited function.[4] In contrast to such phrases that have been properly construed

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4   *See, e.g.*, *Net MoneyIn, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1364, 1366
(Fed. Cir. 2008) (construing "means for generating an authorization indicia" as a
means-plus-function term); *Altiris*, 318 F.3d at 1375 (construing "means of
booting" as a means-plus-function term); *Northrop Grumman Corp. v. Intel Corp.*,
325 F.3d 1346, 1349-50, 1353 (Fed. Cir. 2003) (construing "means for
monitoring" and "means for defining" as means-plus-function terms); *Al-Site*
Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1319 (Fed. Cir. 1999) (describing "means
for securing" as a "claim element in conventional means-plus-function format");

as invoking Section 112(6), however, claim 1 does not recite a "means for" or a "means of" doing anything. Neither the district court nor Defendants have cited any precedent of this Court—and Bosch LLC is unaware of any—holding that the presumption is triggered because a patent notes that a task can be accomplished "by means of" a claimed element. To the contrary, this Court has indicated that the phrase "by means of" in an apparatus claim "would probably be understood to introduce structure or materials rather than a function (*i.e.*, 'by means of a stick')." *Seal-Flex, Inc. v. Athletic Track & Court Constr.*, 172 F.3d 836, 849 n.4 (Fed. Cir. 1999) (dicta).

The "by means of" phrase in claim 1 does not trigger the presumption that Section 112(6) has been invoked because it does not use "'the classic template for functional claim elements' [that] has come to be closely associated with means-plus-function claiming." *Lighting World*, 382 F.3d at 1358 (citation omitted). That language merely identifies the program recognition device as the particular component of the claimed external diagnostic tester[5] that performs the querying and recognizing of a program version. Without using the term "means" or

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id. at 1317-19 ("means for securing" was a means-plus-function limitation but "eyeglass hanger member for mounting a pair of eyeglasses" was not).

[5]   An external diagnostic tester having a diagnostic test plug was a well-known structure in the art. *See* A93 (1:19-31).

anything like it, claim 1 recites that the external diagnostic tester includes "a

program recognition and program loading device." A94 (4:22-27). Only after

these claim terms have been recited does claim 1 then proceed to explain which of

those two claimed devices performs the recited querying and recognizing: "a

program version . . . is queried and recognized by means of the program

recognition device." *Id.* (4:25-27). The phrase "by means of the program

recognition device" merely clarifies which of the two previously recited devices—

the program loading device or the program recognition device—does the

"quer[ying] and recogniz[ing]." It does not thereby claim the program recognition

device as a generic means for doing something.

The specification further demonstrates that the "by means of" phrase does

not invoke the classic template for purely functional claim elements. The

specification repeatedly teaches that the program version is queried and recognized

"***using*** the program recognition device." *See* A92 (Abstract) ("the program

version contained in the connected control unit is queried and recognized ***using the***

program recognition device") (emphasis added); A93 (2:20-22) (same); A94

(3:19-21) ("the external diagnostic tester automatically checks, ***using the program***

recognition device . . . which program version and which data record is available

in the control unit connected at that moment"); *see also* A3087 (¶ 25). Thus, when

claim 1 says that "a program version . . . is queried and recognized by means of the

24

program recognition device," it simply notes that the claimed external diagnostic

tester *uses* the program recognition device to query and recognize a program

version. Where, as here, a device is claimed without denominating it as a generic

"means for" or "means of" accomplishing a function, the presumption is not

triggered merely because the patent also notes that certain functions can be

performed using that claimed structure.

As this Court has explained, the Section 112(6) presumption is properly

applied only when the word "means" appears within the particular claim element

being considered. *See Al-Site Corp.*, 174 F.3d at 1318 ("In the first place, these

elements are not in traditional means-plus-function format. The word 'means'

does not appear within these elements."). Here, the claim element is "program

recognition device." That term appears twice in claim 1, but the "by means of"

language precedes the term only in the second appearance. There is no "means"

language associated with the first recitation of a "program recognition device" in

claim 1. *See* A94(4:22-25) ("the external diagnostic tester comprising, a program

recognition and program loading device"). Indeed, the same phrase that recites the

"program recognition device" also recites the "program loading device," which the

district court correctly held does not trigger the presumption. A16. Thus, the

district court erred in presuming that "program recognition device" is a means-

plus-function term when the "means" language is not part of that element and in fact precedes only one of the two recitations of that element in claim 1.

In claim 1 of the '313 Patent, the "by means of" phrase is linked to the program recognition device, rather than to any function performed by such a device. *See* A94 (4:26-27). If, for example, this patent had claimed a "program recognition circuit"—plainly a structural term, *see, e.g.*, *MIT*, 462 F.3d at 1355-56—the presumption in favor of Section 112(6) would not be invoked merely because the patent also specified that a program version is queried and recognized "by means of" (*i.e.*, using) the program recognition circuit. The claimed program recognition device should be treated no differently.

Indeed, there is good reason why claim 1 claims a "program recognition device" rather than using the traditional means-plus-function language "means for recognizing a program." There is no dispute that the program recognition device does more than simply recognize a program. It both queries *and* recognizes a program version. *See* A11-12 ("Here, looking to the claim language, the corresponding function of 'program recognition device' is 'to query and recognize a program version contained in a programmable control unit of a motor vehicle.'"); A2953 (Defendants proposing the same function for "program recognition device" as identified by district court). Interpreting the recited "program recognition device" as a generic "means for recognizing a program" ignores the querying

function that claim 1 expressly states is accomplished by the "program recognition device." Thus, the patentee's chosen phrase "program recognition device" cannot be read as a generic "means for recognizing a program."

Because the "by means of" language does not trigger the presumption that "program recognition device" is a means-plus-function term, the district court committed reversible error when it "placed on [Bosch LLC] the burden to establish that the claim recited sufficient structure." *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1319-20 (Fed. Cir. 2004) (vacating summary judgment of non-infringement when "the district court legally erred by failing to apply the rebuttable presumption that § 112 ¶ 6 does not apply"); A11-13 (applying the Section 112(6) presumption against Bosch LLC and holding that Bosch LLC did not overcome the presumption). As in *Linear Technology*, the district court should have presumed that Section 112(6) does not apply and "imposed on [Defendants], who advocated a construction under § 112 ¶ 6, the burden of overcoming the presumption by demonstrating that the claim fails to recite sufficiently definite structure or recites a function without reciting sufficient structure for performing that function." *Id.* at 1319 (internal quotation marks omitted).

For the reasons set forth below, Defendants did not overcome that burden because both the intrinsic and extrinsic evidence show that an ordinarily skilled artisan would have known that the program recognition device is an electronic

27

device with a physical structure. *See infra* at 29-52; *Telcordia Techs., Inc. v. Cisco*

Sys., Inc., 612 F.3d 1365, 1376-77 (Fed. Cir. 2010) (holding that "controller" was

sufficient structure because "[t]he record shows that an ordinary artisan would

have recognized the controller as an electronic device with a known structure").

However, even if the "by means of" language in claim 1 could properly trigger the

presumption that the "program recognition device" is a means-plus-function

element, the presumption would be overcome for the same reasons.

**B.   The Court Should Not Rewrite "Program Recognition Device"
And "Program Loading Device" As Means-Plus-Function Terms.**

As shown above, because "program recognition device" does not contain the

typical "means for" or "means of" language that would trigger the presumption

that Section 112(6) applies, the district court should have presumed that "program

recognition device" is not a means-plus-function term. As for the "program

loading device," there is no dispute that Section 112(6) is presumed not to apply.

See A16 ("The claim language, in reference to 'program loading device,' does not

use the word 'means.' Claim language that fails to use the word 'means" creates a

rebuttable presumption that § 112, ¶ 6 does not apply.") (citation omitted) (citing

Personalized Media Commc'ns LLC v. Int'l Trade Comm'n, 161 F.3d 696, 703-04

(Fed. Cir. 1998)).

That presumption "is a strong one that is not readily overcome." *Lighting*

World, 382 F.3d at 1358. In view of this "strong" presumption that Section 112(6)

does not apply, Defendants had the burden to show that the "program recognition device" and "program loading device" terms "are so structurally devoid that [the Court] should rewrite them in means-plus-function format." *Inventio*, 649 F.3d at 1360. Defendants did not meet that burden. These terms are structural rather than purely functional as shown both by the intrinsic evidence and extrinsic evidence that the district court improperly disregarded. And Defendants' own definite constructions for these and similar terms show that the patentee did not clearly invoke the means-plus-function format.

1. "Program Recognition Device" And "Program Loading Device" Are Not Purely Functional Claim Limitations.

Section 112(6) applies "only to purely functional limitations that do not provide the structure that performs the recited function." *Phillips*, 415 F.3d at 1311. As in *Phillips*, "program recognition device" and "program loading device" do not invoke Section 112(6) because neither term is "a purely functional placeholder in which structure is filled in by the specification." *See id.; see also Lighting World*, 382 F.3d at 1360 ("What is important is whether the term is one that is understood to describe structure, as opposed to a term that is simply a nonce word or a verbal construct that is not recognized as the name of a structure and is simply a substitute for the term 'means for.'"). The Defendants pointed to nothing in the specification or prosecution history suggesting that the patentee used those terms to generically denote anything capable of performing the specified functions.

29

See Phillips, 415 F.3d at 1311 ("nothing in the specification or prosecution history suggests that the patentee used the term 'compressed spring' to denote any structure that is capable of performing the specified function") (discussing *TurboCare Div. of Demag Delaval Turbomachinery Corp. v. Gen. Elec. Co.*, 264 F.3d 1111, 1121 (Fed. Cir. 2001)). In fact, the claims and specification demonstrate that the "program recognition device" and "program loading device" are physical electronic structures with actual physical connections to other components discussed in the patent—they are not generic references to any means to accomplish their functions. *See Inventio*, 649 F.3d at 1357 (written description can "inform the analysis of whether the claim recites sufficiently definite structure to overcome the presumption that § 112, ¶ 6 governs the construction of the claim"); *see also Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348, 1364 (Fed. Cir. 2013).

Statements in the claims or specification about what a device is connected to and what signals it processes show that the device is a physical structure that does not invoke Section 112(6). *See Inventio*, 649 F.3d at 1358-59. In *Inventio*, this Court held that a "modernizing device" and a "computing unit" claimed in an elevator control patent were not means-plus-function terms when the patent described what those devices are connected to and what signals they process. Regarding the "modernizing device"—a similar term to those at issue here—the

Court explained that "[t]he written descriptions . . . show how the elements are connected together and to the elevator control and computing unit components of the elevator system." *Id.* at 1358. For example, the Court noted that claim 1 "recites that the 'modernizing device' is connected to an elevator control and a computing unit, where the computing unit transmits a destination signal to the modernizing device." *Id.* Thus, "[t]he written descriptions support the conclusion that the claimed 'modernizing device' is not a purely functional limitation" even though the term "device" by itself "typically do[es] not connote sufficiently definite structure." *Id.* (quoting *MIT*, 462 F.3d at 1354). The Court explained: "In this case, however, the claims recite a 'modernizing device,' delineate the components that the modernizing device is connected to, describe how the modernizing device interacts with those components, and describe the processing that the modernizing device performs." *Id.* Similarly, the term "computing unit" did not invoke Section 112(6) because, *inter alia*, "[t]he claims recite that the computing unit is connected to the modernizing device and generates a destination signal for transmission to the modernizing device." *Id.* at 1359.

As in *Inventio*, the claims and specification of the '313 Patent describe what the "program recognition device" and "program loading device" are connected to, how they interact with the connected components, and what processing they perform. *See id.* at 1358. The program recognition device connects through the

31

diagnostic plug to the control unit of the motor vehicle and receives and processes

signals from the control unit when it queries and recognizes the program version

available in that control unit. *See* A93(2:20-22) ("the program version contained in

the connected control unit is queried and recognized using the program recognition

device"); A94 (3:19-23) ("the external diagnostic tester automatically checks,

using the program recognition device simultaneously and preferably automatically,

which program version and which data record is available in the control unit

connected at that moment"); A11-12 (district court holding that the function of the

program recognition device is "to query and recognize a program version

contained in a programmable control unit of a motor vehicle"). To interface with

the control unit, the program recognition device connects to the diagnostic/test

plug in the motor vehicle. *See* A92 (abstract) ("the program available in the motor

vehicle [is] recognized via the diagnostic/test plug"); A94 (4:27-29) (same).

The '313 Patent thus teaches (1) connections between the program

recognition device and physical components in a motor vehicle, (2) how the

program recognition device interacts with the components to which it connects,

and (3) how the program recognition device participates in signal processing.

Those teachings demonstrate that the "program recognition device" is an actual

physical structure rather than "a purely functional limitation." *See Inventio*, 649

F.3d at 1358-59 (citing the patent's teachings that "delineate the components that

32

the modernizing device is connected to, describe how the modernizing device

interacts with those components, and describe the processing that the modernizing

device performs" and concluding that "[t]he written descriptions support the

conclusion that the claimed 'modernizing device' is not a purely functional

limitation").

The '313 Patent also discusses connections between the "program loading

device" and components of a motor vehicle, as well as signals that are sent from

the "program loading device" to the control unit. For example, the patent teaches

that the program loading device loads, if necessary, an updated version of a

program into the program storage device component of the control unit.[6] The

program loading device interfaces with the control unit of a motor vehicle via the

diagnostic/test plug in the motor vehicle. *See* A93 (1:27-31) (prior art discussing

how "control unit programs can be loaded into the unprogrammed control unit via

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[6]   *See* A94 (4:30-33) ("a respective most current version [of the program] is
loaded by the program loading device into a program storage device of the
pertinent control unit of the motor vehicle"); *id.* (3:25-28) ("the most current
version [of the program] is loaded into the program storage device of the
corresponding control unit by a program loading device, with which the external
diagnostic tester is also equipped"); A93 (2:25-29) ("the respective most current
version [of the program] is loaded by the program loading device of the diagnostic
tester into the program storage device of the pertinent control unit of the motor
vehicle"); A16-17 (district court holding that the "function for 'program loading
device' is 'to load the most current version of a program into a program storage
device of the pertinent programmable control unit of the motor vehicle'").

the interface of the diagnostic/test plug"). In addition, the specification teaches that program loading occurs via "the serial communication protocol," A94 (3:32-35), which means that signals are passed and processed. Thus, the '313 Patent teaches how the "program loading device" connects to, interacts with, and sends signals to physical components of a motor vehicle through physical connections. "Program loading device" is therefore not a "purely functional limitation" that overcomes the strong presumption that Section 112(6) does not apply. *See Inventio*, 649 F.3d at 1358.

Moreover, devices that include electrical circuits that receive, process, and output signals to other components are structures that do not invoke Section 112(6). *See Inventio*, 649 F.3d at 1358 ("modernizing device" that "functions as an electrical circuit that receives signals, processes signals, and outputs signals to other components in the patented system" did not invoke Section 112(6)); *see also MIT*, 462 F.3d at 1355-56 ("circuit" limitations connoted sufficiently definite structure to avoid the application of Section 112(6)); *Power Integrations*, 711 F.3d at 1364-66 (same); *Linear Tech.*, 379 F.3d at 1320-21 (same); *Apex Inc. v. Raritan Comp., Inc.*, 325 F.3d 1364, 1374 (Fed. Cir. 2003) (same).

The '313 Patent teaches that the "program recognition device" and "program loading device" are such electronic devices. First, there is no dispute that the external diagnostic tester itself is a piece of electronic equipment that sends signals

to and receives signals from the control unit of a motor vehicle. *See* A93 (1:10-31); A10 (finding that the external diagnostic tester is electrically connected to the vehicle). Second, the '313 Patent claims state that the "program recognition device" and "program loading device" are components of the diagnostic tester, and the '313 Patent teaches how each of those components participates in the receiving, processing, and sending of electrical signals. Specifically, the program recognition device receives signals from the control unit and processes those signals when it queries and recognizes the program version available in the connected control unit. *See, e.g.*, A93(2:20-22); A94 (3:19-23). The program loading device sends signals to the control unit when it determines to load a program and loads an updated program version into the program storage device component of the control unit. *See, e.g.*, A94 (3:23-28, 4:28-33). Based on those teachings, it is clear that the program recognition device and program loading device include electrical circuits that participate in signal receipt, processing, and output. It is impossible to query, recognize, determine, or load a computer software program except through an electrical circuit. Therefore, like the "modernizing device" term in *Inventio*, "program recognition device" and "program loading device" are not means-plus-function terms. *See Inventio*, 649 F.3d at 1358-59.

The extrinsic evidence further confirms this understanding of the '313 Patent claims and specification. Bosch LLC submitted declaratory testimony from co-

inventor Dr. Wagner, an engineer with over 25 years of "experience with computerized and automated technologies for engine management and control, including vehicle communication technologies." A3083-84 (¶¶ 4, 7). In this testimony—which the district court improperly disregarded, *see infra* at 37-42— Dr. Wagner explained that "program recognition device" and "program loading device" are terms that had generally understood structural meanings in the art at the time the '313 Patent application was filed. A3085 (¶ 14); A3087 (¶ 23). He testified that one of ordinary skill in the art would understand that each of those terms identifies a specific type of electronic device. A3087 (¶ 21) ("program recognition device" would be understood by one of ordinary skill in the art to identify "an electronic detection unit configured to identify or acknowledge the existence, status or validity of a program"); A3085 (¶ 12) ("program loading device" would be understood by one of ordinary skill in the art to identify "an electronic device configured to copy or move a computer program into a memory area from which the program is executed"). Dr. Wagner further listed specific program recognition devices and program loading devices that he had personally used. A3085 (¶ 15); A3087 (¶ 24). Thus, Dr. Wagner concluded based on his knowledge as one skilled in the art that the "program recognition device" and the "program loading device" are physical structures, rather than merely references to generic means of accomplishing functions. *See* A3088 (¶ 27) ("The 'program

36

recognition device' is the structure."); A3086 (¶ 20) ("'program loading device' is

of sufficiently definite structure such that one of ordinary skill in the art would

understand the scope of the term when read in light of the specification").

In view of the '313 Patent's intrinsic teachings and Dr. Wagner's testimony,

"program recognition device" and "program loading device" are not "so

structurally devoid that [the Court] should rewrite them in means-plus-function

format." *See Inventio*, 649 F.3d at 1360; *see also Telcordia Techs.*, 612 F.3d at

1376-77 ("controller" was sufficient structure because "[t]he record shows that an

ordinary artisan would have recognized the controller as an electronic device with

a known structure"). That is particularly so given the strong presumption against

application of Section 112(6) that applies to the '313 Patent, but even if the

opposite presumption applied it would be overcome for the same reasons. The

court thus erred in construing these terms as means-plus-function terms subject to

Section 112(6).

> **2.   The District Court Erroneously Disregarded The Extrinsic Evidence That The "Program Recognition Device" And "Program Loading Device" Are Structures.**

The district court disregarded Dr. Wagner's declaratory testimony for two

reasons, both of which were erroneous.

First, the court characterized Dr. Wagner's testimony as "inventor testimony

as to the inventor's subjective intent" that "is irrelevant to the issue of claim

construction." A14 (quoting *Howmedica Osteonics*, 540 F.3d at 1347); *see also* A17. This statement flies in the face of this Court's precedents. The Court has squarely held that testimony from those skilled in the art can be helpful in determining whether a claim limitation should be treated as a means-plus-function limitation.[7] And it is furthermore settled that testimony from one skilled in the art as to the meaning of claim terms is not inherently disqualified merely because it comes from an inventor. Where appropriate, this Court has "authorized district courts to rely on extrinsic evidence, which 'consists of all evidence external to the patent and prosecution history, including expert and ***inventor testimony***, dictionaries, and learned treatises.'" *Phillips*, 415 F.3d at 1317 (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996)) (emphasis added). Although an inventor's "subjective intent" has little or no weight in determining claim scope, this fact "does not disqualify the inventor as a witness, or overrule the large body of precedent that recognizes the value of the inventor's testimony." *Voice Techs. Group, Inc. v. VMC Sys., Inc.*, 164 F.3d 605, 615 (Fed. Cir. 1999)). In disapproving of inventor testimony on

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7   *See Rembrandt*, 641 F.3d at 1341 ("Expert testimony supports the conclusion that the limitations themselves convey sufficient structure to one of ordinary skill in the art to overcome the presumption of treatment under § 112, ¶ 6."); *Lighting World*, 382 F.3d at 1358 ("The task of determining whether the limitation in question should be regarded as a means-plus-function limitation . . . is a question on which evidence from experts may be relevant.").

subjective intent, the Court "did not hold that the inventor cannot explain the technology and what was invented and claimed;" it "held only that the inventor cannot by later testimony change the invention and the claims from their meaning at the time the patent was drafted and granted." *Id*. Thus, "[a]n inventor is a competent witness to explain the invention and what was intended to be conveyed by the specification and covered by the claims." *Id*.

Dr. Wagner provided exactly the kind of expert inventor testimony authorized by this Court's precedents. His testimony did not go to his subjective intent. Rather, his declaration explained how the terms "program recognition device" and "program loading device" would be understood by one of ordinary skill in the art. *See* A3087 (¶¶ 21, 23); A3085 (¶¶ 12, 14). Such testimony cannot be dismissed as Dr. Wagner's "subjective intent"; he was undisputedly qualified to testify from the perspective of one of ordinary skill in the art because his qualifications met the criteria proposed by Defendants.[8] Based on his qualifications, Dr. Wagner explained that he was offering opinions "from the vantage point of one of ordinary skill in the art." A3084 (¶ 10). The district court

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[8]   *See* A3023 (¶ 5) (Defendants' expert stating one of ordinary skill in the art would have "at least four years of educational training in fields of engineering . . . plus at least two years of experience in . . . engineering of automotive control systems); A3083-84 (¶¶ 3, 9) (Dr. Wagner stating that at the time of the invention, he had "a degree in mechanical engineering" plus "3 years of industry experience in engine management and control").

thus erred as a matter of law in dismissing Dr. Wagner's testimony as the

"inventor's subjective intent." *See* A14, A17.

As a second reason for dismissing Dr. Wagner's testimony, the district court

explained that "the testimony of one of ordinary skill in the art cannot supplant the

total absence of structure from the specification." A14 (quoting *Noah Sys.*,

675 F.3d at 1312) (citation omitted)). But the district court's reliance on the

Court's statement in *Noah Systems* was misplaced. In that case, it was undisputed

that the term at issue—"access means"—invoked Section 112(6), and the question

for the Court was whether the specification disclosed structures corresponding to

the functions performed by this means-plus-function term. 675 F.3d at 1313-14.

The Court determined that the "access means" was implemented by a special

purpose computer such that the specification was required to teach an algorithm for

the special purpose computer. *Id.* at 1312-13. The Court determined that no

algorithm—*i.e.*, no structure—was disclosed to accomplish the recited functions of

the "access means." *Id.* at 1318. The Court held that the district court did not err

in not allowing expert testimony because "the testimony of one of ordinary skill in

the art cannot supplant the total absence of structure from the specification." *Id.* at

1312 (quoting *Default Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc.*,

412 F.3d 1291, 1302 (Fed. Cir. 2005)); *id.* at 1319.

Importantly, the Court contrasted the facts in *Noah Systems* with cases where the question related to the sufficiency of a structure that was disclosed. Specifically, the Court explained that when some structure is disclosed in the specification, such as a partial algorithm, expert testimony is relevant because "the sufficiency of the disclosure of algorithmic structure must be judged in light of what one of ordinary skill in the art would understand the disclosure to impart." *Id.* at 1313 (quoting *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1337 (Fed. Cir. 2008)). Where a claim is subject to Section 112(6), the specification itself must set forth the requisite structure, and that requirement cannot be satisfied by extrinsic evidence such as expert testimony. *See id.* But such testimony remains valid to help explain what is meant by the patent itself.

Unlike in *Noah Systems*, the Court must determine in this appeal whether "program recognition device" and "program loading device" are means-plus-function terms in the first place. As noted above, this Court has squarely held that expert testimony is relevant to that determination. *See supra* note 7; *Rembrandt*, 641 F.3d at 1341; *Lighting World*, 382 F.3d at 1358; *id.* at 1361, 1363 (relying on expert testimony in holding that "connector" does not invoke Section 112(6)).

Dr. Wagner did not provide the type of testimony the Court stated was irrelevant in *Noah Systems*—*i.e.*, he did not identify corresponding structures for the "program recognition device" and the "program loading device" that were not

41

contained in the specification. Instead, Dr. Wagner testified that the "program

recognition device" and "program loading device" are themselves structures, as

would be understood by one of ordinary skill in the art. *See* A3088 (¶ 27); A3086

(¶ 20). Thus, the issue in this appeal is more akin to those cases where the Court

determined whether disclosed structures are sufficient. The Court in *Noah Systems*

explained that expert testimony is relevant to that analysis. *Noah Sys.*, 675 F.3d at

1313; *see also Creo Prods., Inc. v. Presstek, Inc.*, 305 F.3d 1337, 1347 (Fed. Cir.

2002) ("[K]nowledge of one skilled in the art can be called upon to flesh out a

particular structural reference in the specification for the purpose of satisfying the

statutory requirement of definiteness.").

For these reasons, the district court erred in disregarding Dr. Wagner's

testimony that one of ordinary skill in the art would understand the terms "program

recognition device" and "program loading device" to be physical structures. Dr.

Wagner's testimony, particularly when considered in the context of the intrinsic

evidence discussed above, demonstrates that these are structural terms that do not

invoke Section 112(6). And even if, *arguendo*, there was a dispute about how one

of ordinary skill in the art would understand those terms, Dr. Wagner's testimony

(which confirms the intrinsic evidence, *see supra* at 29-34) at the very least raises a

genuine issue of material fact precluding Defendants from obtaining summary

adjudication on their claim of indefiniteness. *See* Fed. R. Civ. P. 56; *Rembrandt*,

641 F.3d at 1343 (reversing summary judgment of indefiniteness based on

"genuine disputes of material fact" created in part by expert testimony as to

application of Section 112(6)).

3. Use Of Functional Language To Describe The "Program Recognition Device" And "Program Loading Device" Does Not Invoke Section 112(6).

The district court's holding that "program recognition device" and "program

loading device" are means-plus-function terms was based on its determination that

those terms are defined by their functions. *See* A12 ("those definitions do not

connote any structure to their respective terms that can be aggregated to disclose an

overall structure for 'program loading device'"); A13 ("'[p]rogram recognition

device' is discussed only in terms of its function, not its structure"); A17 ("the

definitions of 'program' and 'load' offered by Bosch do not connote structure,

leaving 'device' to remain a generic structural term"); *id.* ("the specification

discusses only the function of 'program loading device,' but is silent regarding its

structure"). The district court's reasoning was incorrect because a term does not

invoke Section 112(6) merely because it is defined by reference to its function.

This Court has explained: "[n]either the fact that [the term] is defined in

terms of its function nor the fact that [the term] does not connote a precise physical

structure to those of skill in the art detracts from the definiteness of structure."

Personalized Media, 161 F.3d at 705; *see also Apex*, 325 F.3d at 1372 ("[T]he fact

that a particular [claim term] is defined in functional terms is not sufficient to convert a claim [limitation] into a 'means for performing a specified function' within the meaning of 112(6).") (quoting *Greenberg*, 91 F.3d at 1583); *Watts v. XL Sys., Inc.*, 232 F.3d 877, 881 (Fed. Cir. 2000) (district court erred in applying Section 112(6) based on its incorrect reasoning that the term was "drafted as a function to be performed . . . rather than as a definite structure"). In fact, "[m]any devices take their names from the functions they perform." *Greenberg*, 91 F.3d at 1583. Examples of such devices "are innumerable, such as 'filter,' 'brake,' 'clamp,' 'screwdriver,' or 'lock.'" *Id.* Such devices are not means-plus-function terms merely because they are defined by reference to what they do.

In *Personalized Media*, the Court held that "detector" "is a sufficient recitation of structure" to avoid application of Section 112(6) even though the term was defined by its function of detecting. 161 F.3d at 704-05. The Court explained that "[e]ven though the term 'detector' does not specifically evoke a particular structure, it does convey to one knowledgeable in the art a variety of structures known as 'detectors,'" such as "a rectifier or demodulator." *Id.*; *see also MIT*, 462 F.3d at 1356 ("it is sufficient if the claim term is used in common parlance or by persons of skill in the pertinent art to designate structure, even if the term covers a broad class of structures and even if the term identifies the structures by their function") (quoting *Lighting World*, 462 F.3d at 1359-60). The Court thus

concluded that "the term 'detector' is a sufficiently definite structural term to preclude the application of § 112, ¶ 6." *Id.* at 705.

The Court applied similar reasoning in *Greenberg*, when it held that "detent mechanism" is not a means-plus-function term even though it was "expressed in functional terms." 91 F.3d at 1583. The Court was not troubled by the fact that the term "does not call to mind a single well-defined structure" because "the same could be said of other commonplace structural terms such as 'clamp' or 'container.'" *Id.* Nor was the Court swayed by the fact that the term "is defined in terms of what it does."

Likewise, "program recognition device" and "program loading device" are not means-plus-function terms merely because they are defined by reference to what they do. A "program recognition device," as that term is used in the '313 Patent, is a particular type of structure that also references its function of querying and recognizing a program version available in a connected control unit of a motor vehicle. *See* A93 (2:20-22); A94 (3:19-23); A3088 (¶ 27) ("The 'program recognition device' is the structure."). As Dr. Wagner explained, it would be reasonably well understood by one of ordinary skill that a "program recognition device" is "an electronic detection unit configured to identify or acknowledge the existence, status or validity of a program." A3087 (¶ 21). Thus, the term "program recognition device" does not invoke Section 112(6) because it has a

45

reasonably well understood meaning in the art that connotes structure (*i.e.*, an electronic detection unit). *See Greenberg*, 91 F.3d at 1583.

One of ordinary skill in the art would not mistake "program recognition device" as a generic means of accomplishing a function. *See* A3088 (¶ 27) ("The 'program recognition device' is the structure."). Instead, the "program recognition device" is a type of physical structure that includes the following devices: "translators, converters, receivers, bus monitors, calibration applications, and development environments." A3087 (¶ 24). Although the term may not "evoke a particular structure, it does convey to one knowledgeable in the art a variety of structures" that are program recognition devices. *See Personalized Media*, 161 F.3d at 705; *see also MIT*, 462 F.3d at 1356; A3087 (¶ 24). That is all that is required to avoid application of Section 112(6), particularly given the strong presumption in this case that the patentee did not elect that treatment.

The same analysis applies to "program loading device." A "program loading device," as that term is used in the '313 Patent, is a particular type of structure that is defined by reference to its functions of determining to load a program and, if necessary, loading a program into the program storage device of a control unit. *See* A93 (2:22-29); A94 (3:25-28, 4:29-33). It would be reasonably well understood by one of ordinary skill in the art that a "program loading device" is "an electronic device configured to copy or move a computer program into a

memory area from which the program is executed." A3085 (¶ 12). Thus,

"program recognition device" is not a means-plus-function term because it has a

reasonably well understood meaning that connotes a physical electronic structure.

See Greenberg, 91 F.3d at 1583. An installer is one specific example of a

"program loading device" that would be known to one of ordinary skill in the art.

A3085 (¶ 15).[9]

The parties' and the district court's treatment of the term "external

diagnostic tester" further demonstrates that these terms do not invoke Section

112(6) merely because they include functional language. There was no dispute

that the "external diagnostic tester"—which is made up of the "program

recognition device" and the "program loading device"—does not invoke Section

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[9] In fact, as already noted, *supra* at 26-27, "program recognition device" is not
merely a functional description because that device performs more than just the
task of recognizing a program. The same is true for the "program loading device,"
which does more than simply load a program. It loads a program only if the
program in the control unit of the car is not there in its latest version. *See, e.g.*,
A94 (4:27-31) ("if the program available in the motor vehicle and recognized via
the diagnostic/test plug is not stored there in a latest and most current version, a
respective most current version is loaded by the program loading device"); *see also*
A4201. In other words, the program loading device has a second function beyond
loading a program—it must determine if it needs to load a program and if so, it
then loads the program. Interpreting the recited "program loading device" as a
generic "means for loading a program" ignores the function of determining
whether to load a program. Thus, just as the "program recognition device" cannot
be read as a generic "means for recognizing a program," *supra* at 26-27, "program
loading device" cannot be read as a generic "means for loading a program."

112(6). *See* A9-10; A93 (1:10-31). There was no suggestion that "external diagnostic tester" is a means-plus-function term even though both parties and the district court defined that term based on its function, rather than on any structural attributes. *See* A9-11. The parties defined the external diagnostic tester as "a device capable of" accomplishing specified functions, and the district court ultimately construed the term as a "device capable of temporarily connecting to a motor vehicle and capable of performing, controlling or aiding in an investigation into the cause or nature of a condition, situation, or problem affecting a programmable control unit of the motor vehicle." *Id.* The fact that the external diagnostic tester was defined as "a device capable of" accomplishing certain functions did not make it a means-plus-function term. Thus, it is inconsistent that the district court reasoned that that "program recognition device" and "program loading device" must invoke Section 112(6) based on the same fact that the terms are defined by reference to their functions.

Similarly, the parties agreed that "program storage device" is not a means-plus-function term, such that it should be construed according to its plain meaning. A2214; A2216 (n.6). If, as is undisputed, the term "program storage device" conveys a structure to one of ordinary skill in the art, the similar terms "program recognition device" and "program loading device" cannot be construed differently.

C.   Defendants Did Not Prove That "Program Recognition Device" and "Program Loading Device" Are Indefinite.

Although Defendants were required to disclose any invalidity positions based on 35 U.S.C. § 112 (e.g., indefiniteness) by July 27, 2012 (A292-93), they did not suggest that "program recognition device" and "program loading device" are indefinite until February of 2013. A3114; A3117-19. Until that time, Defendants took the position that both terms could be construed, and cited evidence that allegedly supported Defendants' constructions. *See* A1376-78. Defendants also asserted that they were able to identify the claimed "program recognition device" and "program loading device" in the prior art. A3212-13.

Although the district court noted that Defendants had taken contradictory positions by initially offering constructions and then later alleging the terms could not be construed, the court interpreted Bosch LLC's position as arguing that Defendants had waived the right to assert indefiniteness. *See* A15. The court held that Defendants had committed no waiver. *Id.* However, the issue is not whether Defendants waived their indefiniteness arguments. It is that Defendants did not meet their burden to prove indefiniteness by the requisite clear and convincing evidence when they themselves took conflicting positions and presented contradictory versions of the facts.

Defendants previously defined "program recognition device" and "program loading device" and argued that the intrinsic evidence supported their definitions.

49

A1376-78. Defendants also identified prior art that allegedly anticipated the '313

Patent claims, and pointed to passages in the identified art that were said to

disclose the claimed "program recognition device" and "program loading device."

A3201, A3212-13. If, as Defendants now allege, the claim terms were truly

indefinite, then Defendants would have been unable to define them—much less

point to purported examples of them in the prior art. *See*, *e.g.*, *Enzo Biochem v.*

Applera Corp., 599 F.3d 1325, 1332 (Fed. Cir. 2010) ("[A] claim cannot be both

indefinite and anticipated. . . . If a claim is indefinite, the claim, by definition,

cannot be construed. Without a discernible claim construction, an anticipation

analysis cannot be performed.").

After defining the terms, citing to intrinsic evidence in support of those

definitions, and submitting art that allegedly showed a "program recognition

device" and a "program loading device," Defendants then submitted contradictory

evidence that one of ordinary skill in the art would allegedly be unable to define

those terms. A3024 (¶ 9); A3025 (¶ 17). While Defendants are entitled to plead in

the alternative, they must accept the consequences of having submitted evidence to

support contradicting positions. *See Horton v. Metro. Life Ins. Co.*, 459 F. Supp.

2d 1246, 1250 n.2 (M.D. Fla. 2006) ("A party may argue alternative (even

contradictory) legal theories in a pleading, but a party may not, freely and without

consequence, testify to alternative or contradictory versions of the facts.").

Given Defendants' submission of conflicting evidence, as well as the copious intrinsic and extrinsic evidence discussed above, they did not meet their burden to prove indefiniteness by clear and convincing evidence. *See IP Innovation, LLC v. Red Hat, Inc.*, No. 2:07-cv-447, 2009 WL 2460982, at *11 (E.D. Tex. Aug. 10, 2009) (Defendants "failed to carry their burden of proving indefiniteness by clear and convincing evidence" when they argued that "display system object" was not a structure and also argued in the alternative that only a "display system object" is sufficient structure for the performed function); *Emcore Corp. v. Optium Corp.*, No. 6-1202, 2008 WL 3271553, at *7 (W.D. Pa. Aug. 5, 2008) ("The fact that Optium could first offer a definition cuts against any conclusion that the term is not amenable to construction."). And at a bare minimum, Defendants' conflicting positions and evidence precluded summary adjudication on the issue of indefiniteness.

The district court also held that the specification did not disclose structures corresponding to what the court viewed as means-plus-function terms. But because the court erred in holding that "program recognition device" and "program loading device" are means-plus-function terms, the judgment must be reversed for that reason alone because there is no independent requirement for the specification to disclose corresponding structure. *See Inventio*, 649 F.3d at 1355 ("Because we conclude that the claimed 'modernizing device' and 'computing unit' are not

51

means-plus-function limitations, we do not address whether the written

descriptions disclose corresponding structure."). Instead, the terms are subject to

the ordinary definiteness requirements that apply to ordinary claim terms, which

Defendants never contended were not satisfied here.

CONCLUSION

For the foregoing reasons, the Court should reverse the judgment of the

district court.

Respectfully submitted,

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ADDENDA

(1)   Stipulated Order of Dismissal and Final Judgment

(2)   Opinion and Order Construing Claims

(3)   U.S. Patent No. 6,782,313

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

ROBERT BOSCH LLC,	Case No. 12-11503-RHC-MAR
Plaintiff,	Honorable Robert H. Cleland
vs.	Magistrate Judge Mark A. Randon
SNAP-ON INC. and **DREW TECHNOLOGIES, INC.**	
Defendants.	

STIPULATED ORDER OF DISMISSAL AND FINAL JUDGMENT

Upon consideration of this Court's Opinion and Order Construing Claims (Dkt. 123) and

the parties' request for a Fed. R. Civ. P. 54(b) certification for immediate appeal, it is so

ORDERED and stipulated by the parties that:

1.   This litigation concerns the alleged infringement of Plaintiff's U.S. Patent No.

6,782,313 ("the '313 Patent") by Defendants.

2.   Based on this Court's Opinion and Order Construing Claims (Dkt. 123), a FINAL

JUDGMENT is entered for Defendants' Counterclaim Count II finding the claims of the '313

Patent INVALID due to indefiniteness of the claim terms "program recognition device" and

"program loading device."

3.   Because invalidity is a complete defense to infringement, the Court's finding does

not leave any possibility that Plaintiff could still prove infringement. This Court GRANTS the

parties' request for a Fed. R. Civ. P. 54(b) certification for immediate appeal of this Court's

FINAL JUDGMENT because there is no just reason to delay appellate review.

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4.   Plaintiff's Claim of Infringement of the '313 Patent, Defendants' First, Second Third, Fourth, Fifth and Sixth Affirmative Defenses and Defendants' Counterclaim Counts I and III are MOOT and hereby disposed of through dismissal without prejudice to reassert such claims, defenses and counterclaims in the event of a remand or reversal following Plaintiff's appeal.

5.   The Plaintiff and Defendants disagree as to whether Defendants' Motion for Leave to File First Amended Counterclaims (Dkt. 108) is moot. The parties however agree and it is ORDERED that Defendants' Motion (Dkt. 108) is STAYED pending Plaintiff's appeal, leaving the issue of mootness for consideration after the appeal. All other pending motions are MOOT and hereby DISMISSED without prejudice, and all other outstanding issues are MOOT.

6.   This Order of Dismissal and Final Judgment is without prejudice to, and does not operate as a waiver of, Plaintiff's right to appeal this Court's finding that the claim terms "program recognition device" and "program loading device" are subject to 35 U.S.C. § 112, ¶ 6, and the Court's finding that these claim terms are indefinite, or Plaintiff's right to present any argument on appeal with respect to these Court findings. This Order of Dismissal and Final Judgment is without prejudice to, and does not operate as a waiver of any Party's right to appeal any other issue when such issue is ripe for consideration.

7.   To the extent any party has a right to file a post-judgment motion, this Order of Dismissal and Final Judgment is without prejudice to and does not operate as a waiver of that party's right.

SO ORDERED:

/s/ Robert H. Cleland
HON. ROBERT H. CLELAND
UNITED STATES DISTRICT JUDGE
DATED THIS 23rd DAY OF SEPTEMBER 2013.

A00002

UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

ROBERT BOSCH LLC,

      Plaintiff,

v.   Case No. 12-11503

SNAP-ON, INC., and
DREW TECHNOLOGIES, INC.,

      Defendants.

                                      /

OPINION AND ORDER CONSTRUING CLAIMS

The matter is before the court for construction of the relevant claims in U.S.

Patent No. 6,782,313 (the "'313 Patent") pursuant to *Markman v. Westview Instruments,*

Inc., 52 F.3d 967 (Fed. Cir. 1995) (en banc), *aff'd,* 517 U.S. 370 (1996). Extensive

briefing has been submitted by Plaintiff Robert Bosch LLC and Defendants Snap-on,

Inc., and Drew Technologies, Inc. The court held a claim construction hearing on July

24, 2013.

I. INTRODUCTION[1]

This litigation concerns the alleged infringement of the '313 Patent by the Pass-

Thru Pro II, CarDAQ-Plus, and VERUS Diagnostic Platform products which Defendants

Snap-on Inc. and Drew Technologies, Inc., manufacture. Eberhard Frech and Wolfgang

Wagner invented the '313 Patent and then assigned the Patent to Robert Bosch GmbH,

which subsequently assigned it to Plaintiff Robert Bosch, LLC ("Bosch"). Defendants

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[1] The facts set forth in the Introduction section provide only background and
context. They do not supplement or supplant the court's construction as set forth in the
court's Discussion of the claims.

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have alleged counterclaims, seeking a declaratory judgment that the accused products do not infringe the '313 Patent, that the '313 Patent is invalid, and that Bosch has engaged in patent misuse of the '313 Patent. The lawsuit originated in the Central District of California but was transferred to this court upon Defendants' motion. The court now turns to the claims presented for construction.

II. CLAIMS TO BE CONSTRUED

The parties have submitted the following phrases for construction by the court (phrases for construction are underlined, and those construed by themselves and as a part of a larger phrase are double-underlined):

A. Claim 1

1. An external diagnostic tester for motor vehicles, the motor vehicles having programmable control units with self-diagnostic means, wherein the control units can be connected to the external diagnostic tester via a diagnostic/test plug in the motor vehicle, the external diagnostic tester comprising,

a program recognition and program loading device, wherein a program version contained in a connected control unit is queried and recognized by means of the program recognition device, and, if the program available in the motor vehicle and recognized via the diagnostic/test plug is not stored there in a latest and most current version, a respective most current version is loaded by the program loading device into a program storage device of the pertinent control unit of the motor vehicle, wherein the external diagnostic tester automatically establishes communication with a central dat[a] base[2] in order to check the program version and, if necessary, to obtain the current program version that applies for the control unit connected to the diagnostic tester and to store it there.

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[2] The term "central data base" was mistakenly misspelled by the United States Patent and Trademark Office as "central date base." The term is referred elsewhere in the '313 Patent as "central data base," *see* Patent '313, 2:58, and the parties agree that the term should be spelled "central data base."

B. Claim 2

2. The <u>external diagnostic tester</u> according to claim 1, wherein, in addition to the program for the control units in the motor vehicle having self-diagnostic means, a program for engine control, programs of control units of other systems and subsystems provided for in the motor vehicle are also checked and, if necessary, newly <u>loaded</u> or reprogrammed.

C. Claim 3

3. The <u>external diagnostic tester</u> according to claim 1, wherein the <u>external diagnostic tester</u> <u>automatically</u> carries out a program version check and, if necessary, necessary programming.

D. Claim 4

4. The <u>external diagnostic tester</u> according to claim 1, wherein the <u>external diagnostic tester</u> is equipped with the respective latest versions of necessary programs.

E. Claim 5

5. The <u>external diagnostic tester</u> according to claim 1, wherein a communication takes place via a dedicated line, or wirelessly via mobile telecommunication from a workshop or the motor vehicle itself.

D. Claim 6

6. The <u>external diagnostic tester</u> according to claim 1, wherein the <u>external diagnostic tester</u> is equipped with an <u>authorization</u> to check the <u>program version</u> currently available in the connected control unit of the motor vehicle, and, if necessary, to reprogram a corresponding program.

III. STANDARD

Under *Markman*, a court conducting a patent infringement analysis undertakes a two-step process. First, the court must determine the meaning and scope of the protected patents. This step, claim construction, is a question of law for the court. *Markman*, 52 F.3d at 976, 979. Once the court has interpreted the claims at issue, the second step requires comparing the properly construed claim and the accused device to

determine whether the accused device is infringing. *Id.* at 976. The infringement analysis, generally, is for a jury.

"The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims." *Embrex, Inc., v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000) (quotation omitted). In construing the claim, the court should keep in mind that "the language of the claim defines the scope of the protected invention." *Bell Commc'ns Research, Inc. v. Vitalink Commc'ns, Corp.*, 55 F.3d 615, 619 (Fed. Cir. 1995). For this reason, "'resort must be had in the first instance to the words of the claim,' words [which are ascribed] their ordinary meaning unless it appears the inventor used them otherwise." *Id.* at 620 (quoting *Envirotech Corp. v. Al George, Inc.,* 730 F.2d 753, 759 (Fed. Cir. 1984)). Further, "it is equally 'fundamental that claims are to be construed in light of the specifications and both are to be read with a view to ascertaining the invention.'" *Id.* (quoting *United States v. Adams*, 383 U.S. 39, 49 (1966)).

In construing a claim, the court begins with an analysis of the ordinary meaning of the disputed claim terms. The terms used in the claims bear a heavy presumption that they mean what they say, having the ordinary meaning that would be attributed to those words by persons having ordinary skill in the relevant art. *Tex. Digital Sys.*, *Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1202 (Fed. Cir. 2002). The court can then look to other intrinsic evidence, including the specification and the prosecution history if in evidence. *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001).

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After exhausting the available intrinsic evidence, the court may also consider extrinsic evidence "to aid [it] in coming to a correct conclusion as to the true meaning of the language employed in the patent." *Markman*, 52 F.3d at 980 (quotations omitted). Extrinsic evidence consists of all evidence external to the patent and prosecution history, including testimony of inventors or experts, dictionaries, and learned treatises. *Id.* "However, extrinsic evidence cannot be used to contradict the established meaning of the claim language." *Gart v. Logitech,* 254 F.3d 1334, 1340 (Fed. Cir. 2001). In sum, "the ordinary and customary meaning of a claim term may be determined by reviewing a variety of sources." *Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1298 (Fed. Cir. 2003). These sources "include the claims themselves, dictionaries and treatises, and the written description, the drawings, and the prosecution history." *Id.* (internal citations omitted); *see also Inverness Med. Switz. GmbH v. Warner Lambert Co.*, 309 F.3d 1373, 1378 (Fed. Cir. 2002) (noting that dictionaries are often helpful in ascertaining plain and ordinary meaning of claim language).

It is well established that 35 U.S.C. § 112 permits inventors to use generic means expression in claim limitations, provided that they clearly identify and describe the corresponding structures to perform the stated function in the patent specification. *Atmel v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1381 (Fed. Cir. 1999). Paragraph 6 of 35 U.S.C. § 112 permits the use of means-plus-function language, stating:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

5

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35 U.S.C. § 112, ¶ 6. The court interprets claims written in means-plus-function form to include only the "structure set forth in the specification and its equivalents." *Kahn v. Gen. Motors Corp.*, 135 F.3d 1472, 1476 (Fed. Cir. 1998).

In construing means-plus-function claim limitations, a court employs a two-step process. First, the court identifies the particular function claimed, often called the stated or claimed function. Second, it identifies the "corresponding structure, material, or acts described [by the claimant] in the specification." *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1376 (Fed. Cir. 2001); *see also Asyst Tech., Inc. v. Empak, Inc.,* 268 F.3d 1364, 1369-70 (Fed. Cir. 2001) (describing the two steps in construing a means-plus-function limitation). A party choosing to write a claim in the means-plus-function format, contrary to the ordinary situation, is limited to claiming the corresponding structure actually disclosed in the specification and its equivalents. *Kahn*, 135 F.3d at 1476.

Furthermore, "a structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997). "Whether or not the specification adequately sets forth structure corresponding to the claimed function necessitates consideration of that disclosure from the viewpoint of one skilled in the art." *See, e.g., Budde*, 250 F.3d at 1376 (citing *In re Ghiron*, 442 F.2d 985, 991 (C.C.P.A. 1971) (noting that functional-type block diagrams may be acceptable corresponding structure if they serve in conjunction with the rest of the specification to enable a person skilled in the art to make a selection and practice the claimed invention)).

IV. DISCUSSION

6

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A.   *"external diagnostic tester"* **(Claims 1, 2, 3, 4, 5, 6)**

The "external diagnostic tester" is the subject of the '313 Patent. The term

begins all six claims and is also referenced throughout each claim. Bosch contends that

"external diagnostic tester" means "a device capable of temporarily connecting to or

communicating with a motor vehicle and capable of performing, controlling or aiding in

an investigation into the cause or nature of a condition, situation, or problem affecting a

control unit of the motor vehicle." (Dkt. # 103-5 at Pg ID 5423-24.) Defendants offer a

similar construction: "a device capable of temporarily connecting to a motor vehicle and

capable of performing an investigation into the cause or nature of a condition, situation,

or problem affecting a programable control unit of the motor vehicle." (*Id.*) There are

three differences between the competing constructions. The first is whether an

"external diagnostic tester" can "aid" in an investigation of a control unit in addition to

performing the investigation on its own. Claim 1 states that the "programmable control

units" have "self-diagnostic means." ('313 Patent, 4:19-20.) Bosch points to the

specification which explains that programmable control units "can contain self-diagnostic

means and control" and may conduct "self-diagnosis" in which "error codes are

generated and stored." ('313 Patent, 1:11-14.) Because the programmable control unit

can self-diagnose, both the control unit and the external diagnostic tester play a role in

testing the control unit. Defendants' definition, however, excludes the control unit's self-

diagnostic capability by limiting the testing process to only the external diagnostic tester.

By including the term "aiding," Bosch's definition accurately reflects that an external

diagnostic tester may assist a programmable control unit in completing a diagnostic test.

Second, Bosch claims that, in addition to "connecting to" a motor vehicle, an external diagnostic tester could simply "communicat[e] with" a motor vehicle. However, neither the claim language, specification, or prosecution history suggest that the external diagnostic tester can communicate with a vehicle without it first being connected to the vehicle. Claim 1 recites, "An external diagnostic tester for motor vehicles . . . wherein the control units can be connected to the external diagnostic tester via a diagnostic/test plug in the motor vehicle." ('313 Patent, 4:18-22.) The specification describes the external diagnostic tester being connected to the vehicle before the program check begins. ('313 Patent, 1:61-64 ("[W]hen the external diagnostic tester . . . is connected, the programs available in the control units are automatically checked . . . .").) In filing claim amendments, the '313 applicants explained that "[t]he external diagnostic testing device, in use, is electrically connected with the motor vehicle-side control apparatus." (Dkt. # 55-3 at Pg ID 3243.) Therefore, the intrinsic evidence demonstrates that the external cannot merely "communicate with" a motor vehicle, but rather must be connected to the vehicle. The phrase "or communicating with" will be excluded from the construction of "external diagnostic tester."

The parties also differ on whether "programmable" should modify "control unit." In its first reference to "control units," Claim 1 identifies them as "programmable control units": "An external diagnostic tester for motor vehicles, the motor vehicles having *programmable* control units with self-diagnostic means, wherein the control units can be connected to the external diagnostic tester . . . ." ('313 Patent, 4:18-21) (emphasis added). When Claim 1 states that "the control units" are connected to the external

8

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diagnostic tester, the language is referring to the previously mentioned "programmable control units." Thus, in order to remain faithful to the claim language, "programmable" will modify "control units" in the definition of "external diagnostic tester."

Accordingly, "external diagnostic tester" will be construed to mean "a device capable of temporarily connecting to a motor vehicle and capable of performing, controlling or aiding in an investigation into the cause or nature of a condition, situation, or problem affecting a programmable control unit of the motor vehicle."

B. *"program recognition device"* (Claim 1)

Defendants argue that "program recognition device" should be construed as a means-plus-function limitation under 35 U.S.C. § 112, ¶ 6. Claim 1 states, in part, "a program recognition . . . device, wherein a program version contained in a connected control unit is queried and recognized by *means of the program recognition device* . . . ." ('313 Patent, 4:24-27.) When a claim uses the word "means" to describe a limitation, the court "presume[s] that the inventor used the term advisedly to invoke the statutory mandates for means-plus-function clauses." *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1375 (Fed. Cir. 2003) (citation omitted). While "means for" is the typical phrase that triggers the presumption, *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1584 (Fed. Cir. 1996), the presumption also applies to the phrase "means of," s*ee, e.g.*, *id.* at 1376 (holding that "means of" invoked the presumption.)

There are two ways in which the presumption may be overcome. *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1347 (Fed. Cir. 2002). First, "a claim element that uses the word 'means' but recites no function corresponding to the means does not invoke § 112, ¶ 6." *Id.* Here, looking to the claim language, the corresponding

9

A00011

function of "program recognition device" is "to query and recognize a program version contained in a programmable control unit of a motor vehicle."

The second way in which the presumption can be overcome is if the claim "recites sufficient structure or material for performing the function." *Allen*, 299 F.3d at 1347. The claim language is silent as to the structure for "program recognition device." It is unclear whether a "program recognition device" is comprised of computers, circuitry, software, or something else.

"A claim term recites sufficient structure if the term, as the name for the structure, has a reasonably well understood meaning in the art." *Allen*, 299 F.3d at 1347 (citations omitted). Courts consider dictionary definitions "to determine if a disputed term has achieved recognition as a noun denoting structure." *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1360 (Fed. Cir. 2004). The parties have not provided, and the court has not identified, a dictionary defining "program recognition device." "Device" typically does not connote sufficiently definite structure. *Mass. Inst. of Techn. & Elecs. for Imaging, Inc. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006); *Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 704 (Fed. Cir. 1998) (holding that "device" is "a generic structural term"). The modifiers "program" and "recognition" are not defined in the specification. While Bosch offers technical dictionary definitions of the terms "program" and "recognize," those definitions do not connote any structure to their respective terms that can be aggregated to disclose an overall structure for "program recognition device." *See* IBM Dictionary of Computing 535 (10th ed. 1994) (defining "program" as "a sequence of instructions suitable for processing by a computer"); The Random House Dictionary of the English Language

10

A00012

1611 (2d ed. 1987) (defining "recognize" as "to perceive as existing or true; to identify from knowledge of appearance or characteristic; to acknowledge or treat as valid"). "Program" and "recognition" do not provide any additional information regarding what comprises the "device." Therefore, "program recognition device" does not recite sufficient structure and is a means-plus-function limitation subject to § 112, ¶ 6. *See Mass. Inst.*, 462 F.3d at 1354 (holding that "colorant selection mechanism" invoked § 112, ¶ 6 because "mechanism" does not typically signify structure and "colorant selection," which was not defined in the specification and had no dictionary definition, did not have a generally understood meaning in the art).

Construing a means-plus-function claim limitation is a two-step process. *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1317 (Fed. Cir. 2012). First, the claimed function must be determined. *Id.* at 1317 (citation omitted). The court has already determined, based upon the claim language, that the function of "program recognition device" is "to query and recognize a program version contained in a programmable control unit of a motor vehicle." At the second step, "the court must identify the corresponding structure in the written description of the patent that performs the function." *Id.* (citation omitted). "A structure disclosed in the specification qualifies as a 'corresponding structure' if the specification or the prosecution history clearly links or associates that structure to the function recited in the claim." *Id.* The specification for the '313 Patent does not provide a corresponding structure for "program recognition device." The specification is brief and does not include any diagrams, flowcharts, or algorithms. "Program recognition device" is discussed only in terms of its function, not its structure. (*See, e.g.*, '313 Patent, 2:18-22 ("[T]he external diagnostic tester is equipped with a program recognition

11

A00013

. . . device, and the program version contained in the connected control unit is queried and recognized using the program recognition device . . . .").)

In arguing that "program recognition device" has sufficient structure, Bosch relies on the affidavit of Wolfgang Wagner, a co-inventor of the '313 Patent, who declares that "program recognition device" had a generally understood meaning in the art when he filed the '313 Patent application and that, consequently, he did not need to define the term in the specification. (Dkt. # 103-2 at Pg ID 5391 ¶ 23.) Wagner further asserts that he has "hands-on experience" with various program recognition devices such as translators and converters. (*Id.* ¶ 24.)

Bosch's reliance on Wanger's affidavit is unavailing. "[I]nventor testimony as to the inventor's subjective intent is irrelevant to the issue of claim construction." *Howmedica Osteonics Corp. v. Wright Med. Tech., Inc.*, 540 F.3d 1337, 1347 (Fed. Cir. 2008). Furthermore, even if Wagner was not the inventor of the '313 Patent, when determining whether a claim is indefinite "the testimony of one of ordinary skill in the art cannot supplant the total absence of structure from the specification." *Noah*, 675 F.3d at 1312 (citation omitted). The Federal Circuit has explained that "[t]he prohibition against using expert testimony in this manner is a direct consequence of the requirement that the specification itself adequately disclose the corresponding structure." *Id.*

Bosch points to Defendants' previous claim construction briefing and argues that the claim language was "definite enough for Defendants to propose a construction on multiple occasions and identify evidence in support of that construction." (Dkt. # 103 at Pg ID 5375.) Bosch makes this identical argument two other times in its briefing with

A00014

respect to "program loading device" and "authorization," which Defendants also contend are indefinite. Bosch's position is equivalent to suggesting that Defendants, in submitting papers consistent with the earliest provisions of the court's scheduling order, waived their right to present arguments consistent with later provisions, and is unpersuasive. Defendants properly moved for leave to file supplemental briefing in order to argue that the terms "program recognition device," "program loading device," and "authorization" should be construed as means-plus-function terms pursuant to § 112, ¶ 6. Bosch responded to the motion, and after considering the respective arguments, the court granted leave. (Dkt. # 98.) To now find that Defendants waived the argument that § 112, ¶ 6 should apply to the three terms would, effectively, vacate the court's order granting Defendants (and Bosch) leave to file supplemental briefing and render useless the time, effort, and client money expended on preparing the briefing. The court will not do so. Indeed, if the court considered Defendants' argument waived, it would never have granted leave in the first place.

When § 112, ¶ 6 is invoked, "[t]here must be structure in the specification." *Atmel*, 198 F.3d at 1382. "Fulfillment of the § 112, ¶ 6 tradeoff cannot be satisfied when there is a total omission of structure." *Id.* Here, the corresponding structure of "program recognition device" is absent from the specification. Under § 112, ¶ 6, "a means-plus-function clause is indefinite if a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim." *Noah*, 675 F.3d at 1312. Without a corresponding structure, Defendants have met their burden of proving by "clear and convincing evidence" that "program recognition device" is indefinite. *See Intel Corp. v. VIA Techs., Inc.*, 319 F.3d

13

A00015

1357, 1366 (Fed. Cir. 2003) ("Any fact critical to a holding on indefiniteness . . . must be proven by the challenger by clear and convincing evidence.") Accordingly, "program recognition device" is indefinite, and consequently, Claim 1 and its dependent claims are also rendered indefinite.

C.   *"program loading device"* (Claim 1)

Defendants argue that "program loading device" also invokes § 112, ¶ 6. The claim language, in reference to "program loading device," does not use the word "means." (*See* '313 Patent, 4:27-33 ("[I]f the program available in the motor vehicle and recognized via the diagnostic/test plug is not stored there in a latest and most current version, a respective most current version is loaded by the program loading device into a program storage device of the pertinent control unit of the motor vehicle.").) Claim language that fails to use the word "means" creates a rebuttable presumption that § 112, ¶ 6 does not apply. *Personalized Media*, 161 F.3d at 703-04. The presumption can be rebutted "by showing that the claim element recited a function without reciting sufficient structure for performing that function." *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000). In determining whether a presumption is rebutted, "the focus remains on whether the claim recites sufficiently definite structure." *Id.* (citation and alteration omitted). "[T]he presumption flowing from the absence of the term "means " is a strong one that is not readily overcome." *Inventio AG v. Thyssenkrupp Elevator Americas Corp.*, 649 F.3d 1350, 1356 (Fed. Cir. 2011).

A straightforward reading of the claim language provides that the corresponding function for "program loading device" is "to load the most current version of a program into a program storage device of the pertinent programmable control unit of the motor

14

A00016

vehicle." However, for the same reasons that "program recognition device" did not recite sufficient structure, so too does "program loading device" fail. The claim language does not disclose a structure for "program loading device." "Program loading device" is not defined by any dictionary proffered to the court, and the definitions of "program" and "load" offered by Bosch do not connote structure, leaving "device" to remain a generic structural term. *See*, *respectively*, IBM Dictionary of Computing 535 (10th ed. 1994) (defining "program" as "a sequence of instructions suitable for processing by a computer"); IBM Dictionary of Computing 390 (10th ed. 1994) (defining "load" as "to bring all or part of a computer program into memory from auxiliary storage so that the computer can run the program"). Accordingly, "program loading device," as a claim term that recites a function but not a sufficient structure, is properly construed as a means-plus-function limitation that invokes § 112, ¶ 6.

Turning to the specification, no corresponding structure is identified for "program loading device." As it did with "program recognition device," the specification discusses only the function of "program loading device," but is silent regarding its structure. (*See, e.g.*, '313 Patent, 3:25-28 ("[T]he most current verison is loaded into the program storage device of the corresponding control unit by a program loading device, with which the external diagnostic tester is also equipped.").) Wagner, in his affidavit, asserts that he did not define "program loading device" in the specification because it had a generally understood meaning in the art when he filed the '313 Patent application. As discussed *supra*, this averment is insufficient because an inventor's subjective intent has no bearing on how a claim should be construed. *Howmedica*, 540 F.3d at 1347.

A00017

Because the specification does not disclose a corresponding structure for "program loading device," the term is indefinite.

D. *"queried"* (Claim 1)

Defendants rely on general dictionaries in arguing that "queried" simply means "questioned." Webster's New World Dictionary of American English 1102 (3d ed. 1988) (defining "queried" as "to call in question; ask about"); The Random House Dictionary of the English Language 1584 (2d ed. 1987) (defining "queried" as "to ask or inquire about"). Bosch seeks a broader definition, arguing that "queried" means "requested, signaled or interrogated for triggering or eliciting a response." In addition to citing The Random House Dictionary of the English Language, as did Defendants, Bosch cites a technical dictionary, which defines "query" as "a request for information from a file based on specified conditions." IBM Dictionary of Computing 549 (10th ed. 1994). While the definition supports Bosch's inclusion of the term "requested," Bosch does not cite any dictionary that defines "queried" as "signaled or interrogated for triggering or eliciting a response." Instead, Bosch simply contends that the phrase "requested, signaled or interrogated for triggering or eliciting a response" is more accurate than "questioned" in the context of the claim language, which uses "queried" in relation to a program version. (*See* '313 Patent, 4:25-27 ("[A] program version contained in a connected control unit is queried and recognized by means of the program recognition device . . . .").) Bosch argues that "questioned" would create ambiguity and confusion because a "program version" is a thing, not a person, and thus cannot be "questioned."

The court is not persuaded that the straightforward definition of "questioned" would confuse a jury. Furthermore, Bosch does not identify any intrinsic or extrinsic

16

A00018

evidence to support the phrase "signaled or interrogated for triggering or eliciting a response." However, the technical definition of "queried," which defined the term as "a request for information," provides more clarity than if "queried" were only defined as "questioned." Incorporating the technical and general dictionary definitions, "queried" will be defined as "questioned or requested for information." This definition accurately communicates the purpose of "queried" in the claim language, without using redundant or unnecessary terms that are not supported by the intrinsic or extrinsic evidence.

E.   *"recognized"* (Claim 1)

Defendants contend that "recognized" means "identified." Bosch agrees that "identified" should be included in the definition, but offers a broader construction: "identified or acknowledged the existence, status or validity." Both parties cite dictionary definitions that use the terms "acknowledge." (Dkt. # 50-6 at Pg ID 2553 (Bosch citing The Random House Dictionary of the English Language 1611 (2d ed. 1987) defining "recognize" as "to acknowledge or treat as valid"; and Webster's Ninth New Collegiate Dictionary 984 (1985) defining "recognize" as "to acknowledge or take notice of in some definite way")); (Dkt. # 50-7 at Pg ID 2581 (Defendants citing Webster's New World Dictionary 1121 (3d ed. 1988) defining "recognize" as "to acknowledge the existence, validity, authority, or genuineness of").) Defendants argue that including "acknowledge" would alter the meaning of "program recognition device" from a device that identifies a program to one that merely acknowledges that a program exists. However, this argument is waived as Defendants abandoned their original construction of "program recognition device" for their current position that the phrase is indefinite under 35 U.S.C. § 112, ¶ 6.

17

A00019

Bosch seeks to include not just the word "acknowledge," but the phrase "acknowledged the existence, status or validity." Bosch finds support for the terms "existence," "status," and "validity" in dictionary definitions. *See* The Random House Dictionary of the English Language 1611 (2d ed. 1987) (defining "recognize" as "to perceive as *existing* or true; to acknowledge or treat as *valid*) (emphasis added); Webster's Ninth New Collegiate Dictionary 984 (1985) (defining "recognize" as "to admit as being of a particular *status*") (emphasis added). The phrase "acknowledged the existence, status or validity" is therefore supported by the extrinsic evidence, and the court will adopt Bosch's construction.

F.   *"loaded"* (Claims 1, 2)

The term "loaded" is used twice in the '313 Patent. Claim 1 recites, "if the program available in the motor vehicle and recognized via the diagnostic/test plug is not stored there in a latest and most current version, a respective most current version is loaded by the program loading device into a program storage device of the pertinent control unit of the motor vehicle . . . ." ('313 Patent, 4:27-33.) Claim 2 uses "loaded" in a similar context, stating, "the external diagnostic tester . . . , wherein, . . . a program for engine control, programs of control units of other systems and subsystems provided for in the motor vehicle are checked and, if necessary, newly loaded or reprogrammed." ('313 Patent, 4:39-45.) The parties offer similar definitions of the term. Bosch argues that "loaded" means "fed or placed into main storage from external or auxiliary storage," while Defendants assert that it means "bringing a computer program into main storage from external or auxiliary storage." The dispute concerns whether "fed or placed" or "brought" most appropriately describe the action of "loading."

18

A00020

The parties primarily rely on extrinsic evidence to support their respective positions. Both cite The Random House Dictionary of English Language which, in the context of computers, defines "load" to mean "to bring (a program or data) into main storage from external or auxiliary storage." The Random House Dictionary of English Language 1126 (2d ed. 1987). Bosch also cites the IBM Dictionary of Computing which offers two relevant definitions. The first supports Bosch's proposed construction by defining "load" as "[t]o feed data into a database." IBM Dictionary of Computing 390 (10th ed. 1994). Yet this definition is inapplicable to the term "load" within the context of the '313 Patent because it refers to data being inputted into a database. The language in Clams 1 and 2, on the other hand, uses "load" in the context of loading a program into a control unit. The second definition provided by the IBM Dictionary of Computing is better suited to the '313 Patent by defining "load" within the context of computer programs. Notably, the definition defines "load" using the verb "bring": "to bring all or part of a computer program into memory from auxiliary storage so that the computer can run the program." *Id.* Bosch does not offer any dictionary definition that defines "loaded" using the word "placed."

The general and technical dictionary definitions of "loaded" in the context of computer programs supports the use of the term "brought." Accordingly, the court will adopt Defendants' proposed construction.

G. *"automatically"* (Claims 1, 3)

The parties disagree whether "automatically" allows for minimal human intervention. Defendants contend that "automatically" means "starting, operating, moving, etc. independently or by itself." Within the context of the '313 Patent claims,

A00021

Defendants maintain that "automatically" means "requires no input or work expenditure by an operator or service personnel." Bosch proposes that "automatically" means "pertaining to a process or device that functions in response to an action of a person with minimal reliance on further intervention by that person."

Beginning with the claim language, Claim 1 recites, in relevant part, "An external diagnostic tester . . . *comprising*, a program recognition and program loading device, . . . wherein the external diagnostic tester automatically establishes communication with a central data base in order to check the program version and, if necessary, to obtain the current program version that applies for the control unit connected to the diagnostic tester and to store it there." ('313 Patent, 4:18-38) (emphasis added). "The transitional term 'comprising' . . . is inclusive or open-ended and does not exclude additional, unrecited elements or method steps." *CollegeNet, Inc. v. ApplyYourslef, Inc.*, 418 F.3d 1225, 1235 (Fed. Cir. 2005). In *CollegeNet*, the Federal Circuit construed the term "automatically" within a claim that used the word "comprising" but did not expressly provide for human intervention. *Id.* at 1235. The court held that "'comprising' suggests that additional, unrecited elements are not excluded" and that "[s]uch elements could include human actions to expressly initiate the [functions of the patented machine]." *Id.*

Consistent with the '313 Patent's use of the term "comprising," the parties agree that human intervention is necessary before the external diagnostic tester can "automatically" establish communication with a central database. Specifically, the parties recognize that a service technician is needed to connect and disconnect the external diagnostic tester to the motor vehicle, whether that connection is done physically or wirelessly. The parties also agree that a technician must initiate the

20

A00022

tester—that is, inputting the parameters and starting the procedure by clicking something akin to a "start" button.

The key dispute is whether the '313 Patent allows for any further human intervention. Claim 3, the only other claim that employs "automatically," states, "the external diagnostic tester automatically carries out a program version check and, if necessary, necessary programming." ('313 Patent, 4:47-49.) Bosch argues that "automatically" allows for a minimal degree of human intervention such as monitoring the program check and interrupting the process if necessary. Defendants maintain that the '313 Patent prohibits any human intervention beyond initiating the tester. According to Defendants, including "minimal human intervention" in the construction of "automatically" would create a slippery slope, generating needless litigation concerning how much human intervention constitutes "minimal," and rendering meaningless the term "automatically."

The specification supports a construction of "automatically" that prohibits human intervention. The specification reads:

> [W]hen the external diagnostic tester available in the workshop is connected, the programs available in the control units are automatically checked to determine which version they contain and that, if necessary, a reprogramming of the programs available in the control units is carried out by the external diagnostic tester equipped accordingly. ('313 Patent, 1:61-67)

> No additional work expenditure is created for the service personnel by the automatic procedure of checking and if necessary, programming. During maintenance work, e.g., during an oil change, the diagnostic tester is left connected until the current program record has been programmed. ('313 Patent, 2:1-6)

> [T]he program version check and, if necessary, the required reprogramming, is carried out automatically by the external diagnostic tester. As a result, no particular attention is required by the maintenance and service personnel to

carry out this point during maintenance and service work. ('313 Patent, 2:43-47)

The time required for reprogramming, if necessary, can be spent by the diagnostic tester when the oil is changed in the vehicle, for example. ('313 Patent, 3:39-42)

The specification illustrates that the external diagnostic tester completes the reprogramming process without requiring any "particular attention" by service personnel and that the service personnel can perform other tasks, such as oil changes, while the procedure occurs. There is no indication that service personnel would ever need to interrupt the procedure or monitor it to any extent. Instead, the specification describes the diagnostic tester checking and reprogramming the motor vehicle's programs without any monitoring from service personnel. ('313 Patent, 2:1-6 ("*No additional work expenditure is created for the service personnel by the automatic procedure . . . .*")(emphasis added).)

Bosch argues that this "no additional work" statement implies that service personnel are required to perform *some* work during the procedure, or else the word "additional" would be surplusage. Thus, Bosch concludes that the "no additional work" statement suggests that "the checking procedure does not require, but may permit, intervention by service personnel that does not create additional work." (Dkt. # 50 at Pg ID 2499.) The court disagrees. Any noticeable degree of intervention in monitoring the procedure would create "additional work" for the service personnel compared to not using the tester to check the motor vehicle. By explaining that the automatic procedure creates "no additional work" for the service personnel and that "no particular attention" is needed, the specification illustrates that "automatically" does not allow for any human

22

A00024

intervention. "Additional" in the specification compares the *absence* of work required to use an automatic device to the base line *presence* of work required to service the vehicle in other respects, *e.g.*, changing the oil.

The prosecution history does not indicate whether "automatically" excludes minimal human intervention. The Examiner initially rejected each of the claims in view of Berra, U.S. Patent No. 5,278,759, ("Berra") among others. The applicants filed claim amendments and sought to distinguish Berra which required a user to regularly monitor the device during reprogramming. The applicants explained that, in Berra, "[n]o automatic retrieval of actual versions can take place," unlike the external diagnostic tester which could automatically complete the reprogramming process. (Dkt. # 55-3 at Pg ID 3244.) Based upon the '313 applicants' claim amendments, the Examiner allowed the claims, explaining:

> Although the prior art disclose [sic] several claimed limitations, one of the references teaches an external diagnostic tester for motor vehicles having programmable control units with self-diagnostic means, wherein the external diagnostic tester comprising a program recognition and program loading device for checking to see if the program available in the motor vehicle is the latest and most current version, and if not, the external diagnostic tester **automatically** establishes communication with a central data base in order to check the program version and to obtain the current program version that applies for the control unit connected to the external diagnostic tester and to store it here.

(Dkt. # 55-3 at Pg ID 3251) (emphasis by Examiner). The Examiner substantially relied upon the external diagnostic tester's ability to automatically communicate with a central database and conduct reprogramming in distinguishing the '313 Patent from Berra. But Berra concerned a device that required *regular* monitoring during reprogramming. Here, the dispute is whether the '313 Patent allows for *minimal* human intervention,

23

A00025

such as periodic monitoring and interrupting the procedure. The prosecution history, at most, constitutes a disclaimer of a tester that required regular monitoring during reprogramming. Thus, the Examiner's use of the term "automatically" to distinguish Berra is ultimately uninformative.

Dictionary definitions, however, provide further support that "automatically" should be construed to exclude human intervention after the procedure has been initiated. The general dictionary definitions indicate that "automatically" should be defined without human intervention. Webster's New World Dictionary 93 (3d ed. 1988) (defining "automatic" in the context of machinery as "moving, operating etc. by itself; regulating itself"); The Random House Dictionary of the English Language 140 (2d ed. 1987) (defining "automatic" as "having the capability of starting operating, moving, etc., independently"). Both the IBM Dictionary of Computing (10th ed. 1994) and the IEEE Standard Dictionary of Electrical and Electronic Terms 63 (3d ed. 1984) define "automatic" as "pertaining to a process or device that, under specified conditions, functions without intervention by a human operator." "Under specified conditions" could reasonably be interpreted to mean that the process needs to be set up and initiated before it functions without human intervention.

Though not directly on point, the parties also cite technical dictionary definitions of various types of automatic instruments to support their respective positions. A review of these definitions shows that most automatic instruments do not allow for, or explicitly exclude, human intervention. *See, e.g.*, IEEE Standard Dictionary of Electrical and Electronics Terms 63 (3d ed. 1984) (defining "automatic computer" as "a computer that can perform a sequence of operations *without intervention by a human operator*")

24

A00026

(emphasis added); *id.* at 66 (defining "automatic system" as "a system in which the operations are preformed by electrically controlled devices *without the intervention of operators*) (emphasis added). Bosch identifies only one definition of an automatic instrument that allows for minimal human intervention. *See id.* (defining "automatic test equipment" as "equipment that is designed to conduct analysis of functional or static parameters to evaluate the degree of performance degradation and may be designed to perform fault isolation of unit malfunctions. The decision making, control, or evaluative functions are conducted with *minimum reliance on human intervention.*") (emphasis added). Bosch argues that the definition of "automatic test equipment" is more instructive than the definitions of "automatic" because the '313 Patent concerns a diagnostic tester. But the parties dispute the construction of the term "automatically," not "automatic test equipment"; it is the former that requires judicial construction. The definition of "automatic test equipment" does not outweigh the general and technical dictionary definitions of "automatically" that prohibit human intervention after a process has been initiated.

The claim language, specification, and relevant dictionary definitions support the notion that "automatically" does not allow for human intervention after the external diagnostic tester has been initiated. Therefore, "automatically" will be construed to mean "starting, operating, moving, etc. independently or by itself."

H. *"wherein the external diagnostic tester automatically establishes communication with a central data base in order to check the program version and, if necessary, to obtain the current program version that applies for the control unit connected to the diagnostic tester and to store it there"* **(Claim 1)**

A00027

Bosch argues that the above phrase does not require construction. Defendants assert that the phrase requires construction because it is potentially unclear, specifically in regards to what "it" and "there" refer. The primary dispute, however, concerns what phrases are modified by the term "automatically."

"Automatically" appears twice in the '313 Patent. Claim 3 recites, "the external diagnostic tester carries out a program version check and, if necessary, necessary programming." ('313 Patent, 4:46-49.) The parties agree that, within Claim 3, "automatically" modifies "carries out a program check" and "necessary programming." Claim 1 provides the more controversial appearance of the term "automatically:

> An external diagnostic tester . . . comprising, a program recognition and program loading device, . . . wherein the external diagnostic tester automatically establishes communication with a central data base in order to check the program version and, if necessary, to obtain the current program version that applies for the control unit connected to the diagnostic tester and to store it there.

('313 Patent, 4:18-38.) Bosch argues that "automatically" only modifies "establishes communication with a central data base." Defendants claim that it should also modify (1) "to check the program version," (2) "to obtain the current program version," and (3) "to store [the new program version in the vehicle's control unit]." Defendants propose the following construction:

> The external diagnostic tester *automatically* establishes communication with the central database to check the program version stored in the central database with the program version stored in the programmable control unit of the vehicle. If the program stored in the program storage device of the programmable control unit is not the latest version of the program, the program loading device *automatically* loads the current version of the program from the central database onto the program storage device of the programmable control unit of the vehicle. These automatic procedures require no input or work expenditure by an operator or service personnel.

26

A00028

(Dkt. # 103-5 at Pg ID 5424-25) (emphasis added).

During oral argument, Bosch averred that pursuant to Claim 1, the sole independent claim of the '313 Patent, the only procedure that must be automatically completed by the external diagnostic tester is establishing communication with a central database. That is, after the tester is connected to the programmable control unit of a vehicle and initiated, the tester must automatically communicate with the central database, but the remaining steps—checking the program version, obtaining the current program version, and storing the current program version in the vehicle's control unit—could be done manually by service personnel.

Bosch's interpretation of Claim 1 is inconsistent with the specification, which repeatedly describes the external diagnostic tester automatically performing all of the steps for completing the diagnostic check:

> In contrast to the prior art, the diagnostic device according to the invention has the advantage that, during regular maintenance of the motor vehicle in the workshop, when the external diagnostic tester available in the workshop is connected, the programs available in the control units are automatically checked to determine which version they contain and that, if necessary, a reprogramming of the programs available in the control units is carried out by the external diagnostic tester equipped accordingly . . . . ('313 Patent, 1:59-67)

> No additional work expenditure is created for the service personnel by the automatic procedure of checking and if necessary, programming. During maintenance work, e.g., during an oil change, the diagnostic tester is left connected until the current program record has been programmed. ('313 Patent, 2:1-6)

> In very suitable and advantageous embodiment and further development of the diagnostic tester according to the invention, the program version check and, if necessary, the required reprogramming, is carried out automatically by the external diagnostic tester. As a result, no particular attention is required by the maintenance and service personnel to carry

27

A00029

out this point during maintenance and service work. ('313 Patent, 2:41-47)

The specification never states that the external diagnostic tester, after automatically establishing communication with a central database, requires service personnel to manually check the program verison and complete reprogramming. Instead, the specification highlights that the main advantage of the tester over prior art is its ability to automatically complete the reprogramming procedure. Indeed, the specification explains that the "[o]bject of the present invention is to indicate a possibility according to which the respective current version is cost-effectively programmed in the control units in simple fashion." ('313 Patent, 1:52-55.)

The prosecution history solidifies the notion that the external diagnostic tester automatically conducts the entire sequence of reprogramming steps, not just establishing communication with the central database. The '313 Patent originally included seven claims. The original Claim 1 did not reference the '313 Patent completing any procedures automatically. (*See* Dkt. # 55-3 at Pg ID 3075.) Original Claim 3 was nearly identical to the present version of Claim 3, stating that "the external diagnostic tester automatically carries out the program version check, and if necessary, the necessary reprogramming." (*Id.*) Original Claim 5 depended from Claims 1 and 3, reciting, "the external diagnostic tester automatically establishes communication with a central data base in order to check the program version and, if necessary, to obtain the current program version that applies for the control unit connected to the diagnostic tester and to store it there." (*Id.* at Pg ID 3076.) As discussed *supra*, the Examiner rejected the original seven claims in light of Berra, among other prior art. In response,

A00030

the applicants emphasized the automatic nature of the '313 Patent. The applicants

distinguished Berra by noting that, "[i]n [Berra], only software versions stored in the

'diagnostic tool' can be used. No automatic retrieval of actual versions can take place

. . . ." (*Id.* at Pg ID 3244.) "[A]utomatic retrieval of actual versions" refers not just to

establishing communication with a central database, but also to obtaining the most

current version of the program. The applicants then maintained that "Berra et al.

actually teaches away from the present invention, because specific retractable program

modules 32 are provided, whose actuality is dependent on a user of the apparatus also

monitoring it regularly." (*Id.*) Thus, the applicants disclosed that service personnel

would not need to manually operate the external diagnostic tester as they would when

using the device claimed in Berra. To clarify this point, the applicants cancelled original

Claim 5, choosing instead to include it as a limitation in amended Claim 1. (*Id.* at Pg ID

3240.) In allowing the amended claims, the Examiner, in the reasons for allowance,

emphasized that the automatic nature of the '313 Patent distinguished it from prior art.

(*See id.* at Pg ID 3251.)

     The prosecution history illustrates that the '313 Patent's ability to automatically

complete a reprogramming procedure was a determinative factor for the Examiner in

allowing the claims. Bosch's contention that the '313 Patent requires the external

diagnostic tester to complete only one step automatically—establishing communication

with a central database—contradicts the prosecution history and strips the '313 Patent

of the very quality that permitted its claims to be allowed.

     Bosch argues that construing "automatically" in Claim 1 to modify (1) checking

the program version, (2) obtaining the current program version, and (3) storing the new

A00031

program version would render Claim 3 redundant in violation of the doctrine of claim

differentiation. "'[C]laim differentiation' refers to the presumption that an independent

claim should not be construed as requiring a limitation added by a dependent claim."

Curtiss-Wright Flow Control Corp. v. Velan, Inc., 438 F.3d 1374, 1380 (Fed. Cir. 2006).

However, "the presumption created by the doctrine of claim differentiation is not a hard

and fast rule and will be overcome by a contrary construction dictated by the written

description or the prosecution history." *Regents of Univ. of Cal. v. Dakocytomation Cal.,*

Inc., 517 F.3d 1364, 1375 (Fed. Cir. 2008). Here, the specification and prosecution

history establish that "automatically" should modify all of the steps an external

diagnostic tester takes to complete a program check. Keeping in mind the construction

of "automatically," discussed *supra*, which is defined to exclude human intervention, the

phrase at issue in this section will be construed as follows:

> After it has been connected and initiated, the external diagnostic tester
> automatically establishes communication with the central data base to check
> the program version stored in the central data base with the program version
> stored in the programmable control unit of the vehicle. If the program stored
> in the program storage device of the programmable control unit is not the
> latest version of the program, the program loading device automatically loads
> the current version of the program from the central data base onto the
> program storage device of the programmable control unit of the vehicle.

I.   *"central data base"* (Claim 1)

Bosch argues that "central data base" means "a collection of related data

organized for ease of access of at least a portion of the data by a separately located

device." Defendants contend that "central data base" is "a single collection of data that

contains the latest and most current version of software for a control unit of the vehicle.

The central database is spatially separated from the motor vehicle-side control

A00032

apparatus as well as from the diagnostic testing device." There are two key differences

between the proposed constructions. First, while both parties agree that a "central

database" is a collection of data, Bosch argues that the data must be "organized for

ease of access" in order to distinguish "central data base" from any other collection of

data. Bosch cites two dictionary definitions to support its position. *See* The American

Heritage Dictionary of the English Language 475 (3d ed. 1996) (defining "database" as

"a collection of data arranged for ease and speed of search and retrieval."); The

Random House Dictionary of the English Language 508 (2d ed. 1989) (defining

"database" as "a comprehensive collection of related data organized for convenient

access, generally in a computer"). Defendants do not construe "central data base" to be

an organized collection of data, but neither do Defendants argue that it would be

incorrect to so define the term. As the extrinsic evidence favors Bosch's construction,

and Defendants do not offer a counter-argument, the construction of "central data base"

will include "organized for ease of access of at least a portion of the data."

The second difference between the proposed constructions concerns how the

definition should address that a "central data base" is physically separate and distinct

from the external diagnostic tester. Defendants rely on the prosecution history, where

the applicants in their claim amendments explained that "[t]he external diagnostic

testing device, in use, is electronically connected with the motor vehicle-side control

apparatus, and also communicates from time to time with a central database that is

spatially separated from the motor vehicle-side control apparatus as well as from the

diagnostic testing device." (Dkt. # 50-8 at Pg ID 2591) (emphasis added). Defendants

do not assert that this statement is a disavowal of claim scope, but rather that it

31

A00033

provides clarification for what constitutes a "central data base." Bosch argues that using

the phrases "motor vehicle-side control apparatus" and "diagnostic testing device" will

confuse the jury. Neither of those phrases are used in the claim language. While

"motor vehicle-side control apparatus" and "diagnostic testing device" appear to be

synonyms for "programmable control unit" and "external diagnostic tester," respectively,

a jury will have to reconcile the competing phrases and determine if any differences

exist. The court agrees that introducing the new terms could create unnecessary

confusion for a jury. Bosch proposes to define "central data base" as "a separately

located device," which the court finds is a simple and clear way of explaining that the

database is physically distinct from the external diagnostic tester. Thus, Bosch's

proposed construction will be adopted.

J.   *"program version"* (Claims 1, 6)

Bosch maintains that "program version" should be construed according to its

plain meaning, while Defendants contend that "program version" means "the version of

the software contained in the program storage device of the programmable control unit."

(Dkt. # 55 at pg ID 3044.) The only substantive argument regarding the phrase's

construction was presented by Defendants who merely assert, without elaboration, that

their proposed construction is supported in the following lines of the specification:

> [T]he external diagnostic tester automatically checks, using the program
> recognition device simultaneously and preferably automatically, which
> program version and which data record is available in the control unit
> connected at the moment.

('313 Patent, 3:29-35.) This portion of the specification provides no guidance as to how

"program version" should be construed, and certainly does not support Defendants'

32

A00034

construction. Defendants' proposed construction introduces the term "software," which is not recited in the '313 Patent and, consequently, risks causing unnecessary confusion for the jury. Assuming that "software" is a synonym for "program," Defendants' proposed construction seems uninformative as it defines "program version" as "the version of the program." "Program version" is a simple, understandable term that will be construed according to its plain meaning.

K.   "*authorization*" (Claim 6)

Defendants argue that "authorization" should be construed as a means-plus-function limitation and found indefinite. Claim 6, in relevant part, recites that "the external diagnostic tester is equipped with an authorization to check the program version currently available in the connected control unit of the motor vehicle, and, if necessary, to reprogram a corresponding program." ('313 Patent, 4:58-61.) As the claim term does not use the word "means," there is a rebuttable presumption that § 112, ¶ 6 is not invoked. *Personalized Media*, 161 F.3d at 703-04. Defendants contend, and the court agrees, that "authorization" has the function "to check the program version currently available in the connected control unit of the motor vehicle and, if necessary, to reprogram a corresponding program."

Having found that "authorization" discloses a function, the question is whether "authorization" recites sufficient structure to avoid the application § 112, ¶ 6. Like "program recognition device" and "program loading device," the claim language does not indicate what materials or structure comprises the "authorization." However, "authorization" has a reasonably understood meaning to those skilled in the art of computer engineering. Unlike the term "device," "authorization" is not a generic

33

A00035

structural term. The IBM Dictionary of Computing provides a definition of "authorization"

that connotes structure to the term. IBM Dictionary of Computing 41 (10th ed. 1994)

(defining "authorization" to mean "in computer security, the right granted to a user to

communicate with or make use of a computer system.") Simply because "authorization"

does not conjure a specific structure does not undermine the conclusion that individuals

skilled in the art would understand what is meant by term. *See Personalized Media*,

161 F.3d at 705 ("[T]he fact that the term 'detector' does not connote a precise physical

structure in the minds of those of skill in the art [does not] detract[] from the definiteness

of structure.")

The presumption that "authorization" does not invoke § 112, ¶ 6 remains

unrebutted. Thus, the term is definite, and the court will adopt Bosch's proposed

construction: "an electronic access control unit configured to grant or deny permission

based on credentials or attributes."

V. CLAIM CONSTRUCTION

In light of the above discussion and analysis, the disputed claim terms of U.S. Patent

No. 6,782,313 are construed as follows:

Claim Phrase	Court's Construction
"external diagnostic tester" (Claims 1-6)	"a device capable of temporarily connecting to a motor vehicle and capable of performing, controlling or aiding in an investigation into the cause or nature of a condition, situation, or problem affecting a programmable control unit of the motor vehicle"

34

A00036

"program recognition device" (Claim 1)	**Function:** "to query and recognize a program version contained in a programmable control unit of a motor vehicle" **Corresponding Structure:** The term is indefinite because the specification does not disclose sufficient structure.
"program loading device" (Claim 1)	**Function:** "to load the most current version of a program into a program storage device of the pertinent programmable control unit of the motor vehicle" **Corresponding Structure:** The term is indefinite because the specification does not disclose sufficient structure.
"queried" (Claim 1)	"questioned or requested for information"
"recognized" (Claim 1)	"identified or acknowledged the existence, status or validity"
"loaded" (Claims 1, 2)	"bringing a computer program into main storage from external or auxiliary storage"
"automatically" (Claims 1, 3)	"starting, operating, moving, etc. independently or by itself"

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A00037

"wherein the external diagnostic tester automatically establishes communication with a central data base in order to check the program version and, if necessary, to obtain the current program version that applies for the control unit connected to the diagnostic tester and to store it there" (Claim 1)	"after it has been connected and initiated, the external diagnostic tester automatically establishes communication with the central data base to check the program version stored in the central data base with the program version stored in the programmable control unit of the vehicle. If the program stored in the program storage device of the programmable control unit is not the latest version of the program, the program loading device automatically loads the current version of the program from the central data base onto the program storage device of the programmable control unit of the vehicle"
"central database" (Claim 1)	"a collection of related data organized for ease of access of at least a portion of the data by a separately located device"
"program version" (Claims 1, 6)	Plain meaning
"authorization" (Claim 6)	"an electronic access control unit configured to grant or deny permission based on credentials or attributes"

VI. CONCLUSION

For the reasons set forth above, IT IS ORDERED that the claims of U.S. Patent No. 6,782,313 are CONSTRUED as set forth in the body of this order.

       s/Robert H. Cleland
       ROBERT H. CLELAND
       UNITED STATES DISTRICT JUDGE

Dated: August 9, 2013

A00039

I hereby certify that a copy of the foregoing document was mailed to counsel of record on this date, August 9, 2013, by electronic and/or ordinary mail.

 s/Lisa Wagner
Case Manager and Deputy Clerk
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A00039

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(12) **United States Patent**   (10) **Patent No.:**   **US 6,782,313 B1**
Frech et al.   (45) **Date of Patent:**   **Aug. 24, 2004**

(54) **DIAGNOSTIC TEST DEVICE FOR MOTOR VEHICLE WITH PROGRAMMABLE CONTROL DEVICES**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(58) **Field of Search** 701/31, 29, 33, 701/35, 30, 32; 455/418, 419, 423

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Primary Examiner—Tan Q. Nguyen
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(57)   **ABSTRACT**

A diagnostic tester for motor vehicles is described, and programmable control units having self-diagnostic means are provided for in the motor vehicle that, in program-controlled fashion, control, monitor the engine control and other systems of the motor vehicle, generate error codes and store them, and which can be connected to an external diagnostic tester via a diagnostic/test plug in the motor vehicle. The external diagnostic tester is equipped with a program recognition and program loading device. The program version contained in the connected control unit is queried and recognized using the program recognition device. Then, if the program available in the motor vehicle and recognized via the diagnostic/test plug, available in the connected control unit of the motor vehicle is not stored in the latest and most current version, the respective latest version is loaded by the program loading device into the program storage device of the corresponding control unit.

6 Claims, No Drawings

US 6,782,313 B1

1

DIAGNOSTIC TEST DEVICE FOR MOTOR VEHICLE WITH PROGRAMMABLE CONTROL DEVICES

BACKGROUND OF THE INVENTION

The invention is based on a diagnostic tester for motor vehicles having programmable control units.

Diagnostic testers for motor vehicles that contain programmable control units are generally known. Such programmable control units can contain self-diagnostic means and control, monitor the engine control and other systems of the motor vehicle in program-controlled fashion. In self-diagnosis, error codes are generated and stored. These control units and the error code storage devices can be connected to an external diagnostic tester via a diagnostic/test plug in the motor vehicle.

The interaction between motor vehicle control units having self-diagnostics and the external diagnostic tester are described in detail in an article, for example, by D. Nemec entitled "Möglichkeiten komfortabler Testgeräte zur Auswertung der Eigendiagnose von Steuergeräten im Kraftfahrzeug" ["*Possibilities of convenient test units for the evaluation of self-diagnosis of control units in the motor vehicle*"] in VDI Berichte ["VDI Reports"] No. 687, 1988, pages 365–385. Among other things, this article also discusses, on page 384, for example, that, with variant programming, entire control unit programs can be loaded into the unprogrammed control unit via the interface of the diagnostic/test plug. This is essential in particular before the start of a series, because the manufacturer can still change parameters at that point. Moreover, spare-parts stocking is reportedly easier, because it is sufficient to stock unprogrammed control units which can then be programmed and installed from case to case.

The system scope of engine controls provided for in motor vehicles has become very comprehensive due to the requirements for convenience, security, and diagnostics. For example, a Motronic engine control system has approximately 4,000 data that must be adapted to the requirements of the respective motor vehicle. Due to the generally tight time frame for the start of a series of engine controls, data or program changes cannot be ruled out during the current series. Today, engine controls having self-diagnostics are predominantly equipped with programmable flash storage devices. In order to reprogram to correct data or functions, the control units must be replaced or connected to programming units. If there are errors in the serial programs, high costs are incurred despite the ability to reprogram due to additional expense for the programming.

Object of the present invention is to indicate a possibility according to which the respective current version is cost-effectively programmed in the control units in simple fashion.

SUMMARY OF THE INVENTION

In contrast to the prior art, the diagnostic device according to the invention has the advantage that, during regular maintenance of the motor vehicle in the workshop, when the external diagnostic tester available in the workshop is connected, the programs available in the control units are automatically checked to determine which version they contain and that, if necessary, a reprogramming of the programs available in the control units is carried out by the external diagnostic tester equipped accordingly, so that the

2

most current version is always available there. No additional work expenditure is created for the service personnel by the automatic procedure of checking and if necessary, programming. During maintenance work, e.g., during an oil change, the diagnostic tester is left connected until the current program record has been programmed. No additional costs are generated for the control units themselves, because an interface for reprogramming or programming is already available there. The customer therefore receives the respective current program status as part of maintenance work on the vehicle. Warranty costs for reprogrammings in the field can therefore be prevented as well. Moreover, It can be taken into account by means of the reprogramming in simple fashion that error-free programs are not always available in the condition at delivery as the complexity of systems increases.

According to the invention, this is achieved in principle by the fact that the external diagnostic tester is equipped with a program recognition and program loading device, and the program version contained in the connected control unit is queried and recognized using the program recognition device, and that then, if the program available in the motor vehicle and recognized via the diagnostic/test plug, available in the connected control unit of the motor vehicle is not stored there in the latest and most current version, the respective most current version is loaded by the program loading device of the diagnostic tester into the program storage device of the pertinent control unit of the motor vehicle.

According to an advantageous and suitable further development of the device according to the invention, in addition to the program for the motor vehicle control units having self-diagnostic means, in particular the program for engine control, programs of control units of other systems and subsystems provided for in the motor vehicle are also checked and, if necessary, newly loaded or reprogrammed. This provides a very flexible possibility for keeping the various control and diagnostic programs available in the various control units of a motor vehicle updated to the respective most current status.

In very suitable and advantageous embodiment and further development of the diagnostic tester according to the invention, the program version check and, if necessary, the required reprogramming, is carried out automatically by the external diagnostic tester. As a result, no particular attention is required by the maintenance and service personnel to carry out this point during maintenance and service work.

According to an advantageous embodiment of the device according to the invention, the external diagnostic tester is equipped with the respective latest versions of the necessary programs. Under certain circumstances, this can lead to too great of a demand on the storage device of the diagnostic tester.

According to a further very advantageous embodiment of the invention, it is therefore provided for that the external diagnostic tester automatically establishes communication with a central data base in order to check the program version and, if necessary, to obtain the current program version that applies for the control unit connected to the diagnostic tester and to store it there.

In a further advantageous embodiment of this version of the diagnostic tester according to the invention, the communication between the diagnostic tester and the central data base takes place via dedicated line, or wirelessly via mobile telecommunication from the workshop or the motor vehicle itself.

US 6,782,313 B1

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In a further advantageous embodiment of the diagnostic tester according to the invention, it is provided for, in order to increase security, that the external diagnostic tester is equipped with a special authorization to check the program version currently available in the connected control unit of 5 the motor vehicle and, if necessary, to reprogram the corresponding program.

The invention will now be explained in greater detail using an embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

According to the invention, the external diagnostic tester that is available in a service or repair workshop is equipped with a program recognition and program loading device. 15 When the error storage devices of the various control units are read out via the diagnostic/test plug during servicing of the vehicle, therefore, the external diagnostic tester automatically checks, using the program recognition device 20 simultaneously and preferably automatically, which program version and which data record is available in the control unit connected at that moment. The diagnostic tester then simultaneously compares whether the program and data record identified agrees with the most current status. If this 25 is not the case, the most current version is loaded into the program storage device of the corresponding control unit by a program loading device, with which the external diagnostic tester is also equipped. New program and data status is therefore written to the corresponding memory areas of the 30 connected control unit. The control unit is therefore newly programmed or reprogrammed accordingly. The control units used today are equipped with a flash storage device that can be programmed via the serial communication protocol via the diagnostic/test plug. 35

The external diagnostic tester in the workshop, in addition to the normal diagnostic work, therefore also performs the checking of the available program versions and, if necessary, the updating of the programs in the control units. The time required for reprogramming, if necessary, can then be spent 40 by the diagnostic tester when the oil is changed in the vehicle, for example. To accomplish this, the external diagnostic tester is simply left connected to the vehicle for a longer period of time.

According to an embodiment of the invention, the latest 45 program status for the individual control units used in various motor vehicles can be contained in the external diagnostic tester itself. To this end, CD-ROMs or similar comprehensive data carriers can regularly communicate the current program and data records to update the computer in 50 the service centers.

It is also possible, however, and, in fact, generally much more suitable, to store all current program and data records for the control units used in the vehicles in one central data base. If the diagnostic tester checks a vehicle in the 55 workshop, it then automatically establishes a connection with the central data base by means of its devices, in order to carry out the check for the latest program version, on the one hand, and, on the other, if absolutely necessary, to have the latest program record communicated to it by the central 60 location, so that it stores this latest version in the corresponding memory area of the connected control unit by means of its program loading device.

The connection between the diagnostic tester in the workshop and the central location can take place either via a dedicated line or a wireless telephone to the telephone outlet in the workshop, or also via wireless mobile telecommunication from the workshop or even the motor vehicle itself to the central data base. Communication devices already available in the vehicle itself can be used for this purpose, if necessary. For security reasons, the external diagnostic tester is advantageously equipped with a corresponding special 10 authorization to perform checks and reprogramming.

In advantageous fashion, the invention allows the updating of programs available in control units without requiring considerable additional expense for this. The most current program and data status in the corresponding control units is therefore always available to the motor vehicle driver in his motor vehicle.

What is claimed is:

1. An external diagnostic tester for motor vehicles, the motor vehicles having programmable control units with self-diagnostic means, wherein the control units can be connected to the external diagnostic tester via a diagnostic/test plug in the motor vehicle, the external diagnostic tester comprising,

   a program recognition and program loading device, wherein a program version contained in a connected control unit is queried and recognized by means of the program recognition device, and, if the program available in the motor vehicle and recognized via the diagnostic/test plug is not stored there in a latest and most current version, a respective most current version is loaded by the program loading device into a program storage device of the pertinent control unit of the motor vehicle, wherein the external diagnostic tester automatically establishes communication with a central date base in order to check the program version and, if necessary, to obtain the current program version that applies for the control unit connected to the diagnostic tester and to store it there.

2. The external diagnostic tester according to claim 1, wherein, in addition to the program for the control units in the motor vehicle having self-diagnostic means, a program for engine control, programs of control units of other systems and subsystems provided for in the motor vehicle are also checked and, if necessary, newly loaded or reprogrammed.

3. The external diagnostic tester according to claim 1, wherein the external diagnostic tester automatically carries out a program version check and, if necessary, necessary programming.

4. The external diagnostic tester according to claim 1, wherein the external diagnostic tester is equipped with the respective latest versions of necessary programs.

5. The external diagnostic tester according to claim 1, wherein a communication takes place via a dedicated line, or wirelessly via mobile telecommunication from a workshop or the motor vehicle itself.

6. The external diagnostic tester according to claim 1, wherein the external diagnostic tester is equipped with an authorization to check the program version currently available in the connected control unit of the motor vehicle, and, if necessary, to reprogram a corresponding program.

* * * * *

CERTIFICATE OF SERVICE

I certify that on January 23, 2014, this Brief for Appellant was served by

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CERTIFICATE OF COMPLIANCE

Pursuant to Federal Rule of Appellate Procedure 32(a)(7)(C), I certify that

this Brief for Appellee is proportionately spaced and contains 12,290 words

excluding parts of the document exempted by Rule 32(a)(7)(B)(iii).

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